CONTINUOUS FLOW ICEMAKER

WCC700E Series

Installation Guide

Owner-Operator's Manual

Service Manual

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Marmon Foodservice Technologies
A Berkshire Hathaway Company

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Contact Information:
To inquire about current revisions of this and other documentation or for assistance with any Cornelius product contact:

www.marmonfoodservice.com
www.cornelius.com
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EQUIPMENT REGISTRATION

Marmon Foodservice Technologies

Thank you for purchasing your equipment from the Marmon Foodservice Technologies family of brands. From technical support to warranty dispatch to replacement parts sales, Marmon Link provides your entire after-sales support for Cornelius, Prince Castle, Silver King, and Angelo Po America equipment.

Registering your equipment will help us keep you up to date on equipment information, preventative maintenance resources, and other topics. Your equipment's warranty will not be affected if you choose to not fill out this form.

To expedite the process, we ask that you have the following:

- The serial numbers of the equipment you purchased.
- The name and email address for a designed store contact.
- The general store information, including address location number.

REGISTER YOUR EQUIPMENT

To Maximize Your Benefits

- Comprehensive after-sales service
- Over the phone technicians
- Quick-ship parts

Complete with:

- Serial Number
- Equipment location details

SCAN ME TO REGISTER

Your equipment serial number will be validated against our database of existing serial numbers. If you are having difficulties entering a valid number, please contact Marmon Link at **1-866-275-6392**.

Model Number Guide

WCC700-EAUS1

W C C 700 - E A US 1

Decoder:

W: Brand

C: Continuous (ice-maker type)

C: Chunklet Ice (ice type)

700: Daily ice production (700 lbs)

E: R290 refrigerant

A: Air Cooled (condenser component cooling)

US: United States (distribution zone)

1: Variant (depending on features)

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SAFETY INSTRUCTION

Read and Follow ALL Safety Instructions

Safety Overview

- Read and follow ALL SAFETY INSTRUCTIONS in this manual and any warning/caution labels on the unit (decals, labels or laminated cards).
- Read and understand ALL applicable OSHA (Occupational Safety and Health Administration) safety regulations before operating this unit.

Safety Alert Recognition

Recognize Safety Alerts

This is the safety alert symbol. When you see it in this manual or on the unit, be alert to the potential of personal injury or damage to the unit.

Different Types of Alerts

DANGER:

Indicates an immediate hazardous situation which if not avoided WILL result in serious injury, death or equipment damage.

WARNING:

Indicates a potentially hazardous situation which, if not avoided, COULD result in serious injury, death, or equipment damage.

CAUTION:

Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury or equipment damage.

Safety Tips

- Carefully read and follow all safety messages in this manual and safety signs on the unit.
- Keep safety signs in good condition and replace missing or damaged items.
- Learn how to operate the unit and how to use the controls properly.
- Do not let anyone operate the unit without proper training. This appliance is not intended for use by very young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.
- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.

Qualified Service Personnel

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

Safety Precautions

This unit has been specifically designed to provide protection against personal injury. To ensure continued protection observe the following:

⚠ WARNING:

Disconnect power to the unit before servicing following all lock out/tag out procedures established by the user. Verify all of the power is off to the unit before any work is performed. Failure to disconnect the power could result in serious injury, death or equipment damage.

⚠ CAUTION:

Always be sure to keep area around the unit clean and free of clutter. Failure to keep this area clean may result in injury or equipment damage.

⚠ WARNING:

Keep ventilation openings clear of obstructions. This applies to the appliance, the enclosure or the built-in structure.

SHIPPING AND STORAGE

⚠ CAUTION:

Before shipping, storing or relocating the unit, it must be sanitized and all sanitizing solution must be drained from the system. A freezing ambient environment will cause residual sanitizing solution or water remaining inside the unit to freeze, resulting in damage to internal components.

POWER CORD

⚠ CAUTION:

If the power cord is damaged, it must be replaced by a special cord available from the manufacturer or its service agent.

SOUND LEVEL

⚠ CAUTION:

The A-weighted sound pressure level has been determined to be below 70dBA.

Unit Location

⚠ CAUTION:

Appliance is not suitable for installation in an area where a water jet could be used.

⚠ CAUTION:

The appliance must be placed in an upright position.

⚠ WARNING:

This unit is not designed for use in outdoor locations.

Flammable Refrigerants

⚠ WARNING:

Refer to nameplate. Some ice-maker models may contain up to 150 grams of R290 (propane) refrigerant. R290 (propane) is flammable in air concentrations of approximately 2.1% to 9.5% by volume (LEL lower explosion limit and UEL upper explosion limit). An ignition source at a temperature above 470°C is needed for combustion to occur.

⚠ WARNING:

For icemakers with flammable refrigerant in their cooling units: installation, handling, servicing and disposal must be carried out by authorized technicians only.

⚠ WARNING:

This equipment must be installed in accordance with the ASHRAE 15 Safety Standard for Refrigeration Systems.

⚠ WARNING:

Do not use mechanical devices or other means to accelerate the defrosting process or during cleaning, other than those recommended by the manufacturer.

⚠ WARNING:

This equipment cannot be installed in corridors or hallways of public buildings.

⚠ WARNING:

Do not use electrical appliances inside the food/ice storage compartments unless they are of the type recommended by the manufacturer.

⚠ WARNING:

The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).

⚠ WARNING:

Do not pierce or burn.

⚠ WARNING:

Be aware that refrigerants may not contain an odor.

⚠ WARNING:

Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.

⚠ WARNING:

To minimize the risk of possible ignition due to incorrect parts, component parts shall only be replaced with like components.

GENERAL INFORMATION

General Description

This section gives the description, theory of operation, and design data for continuous flow icemakers.

Electrical & Refrigerant Specifications

Table 1

Models	Condensing Unit	Current Draw (Amps)	Required Circuit Size (Amps)	VAC	HZ	PH	Wire	Refrigerant		Power Cord
								Weight	Type	
WCC700-EAUS1	Air Cooled	13	20	115	60	1	2	140 g (4.94 oz)	R290	NEMA 5-20p
WCC700-EAUS2	Air Cooled	13	20	115	60	1	2	140 g (4.94 oz)	R290	NEMA 5-20p

NOTE: For units not listed in above chart, refer to nameplate or contact factory service.

Climate Class

The climate class indicates the condition of the test room in which the machine was evaluated. During the test, the test room maintained values of temperature and humidity within ±1 °C of the temperature and ±5 units of the relative humidity percentage values at the specified climate measuring point(s).

Table 2

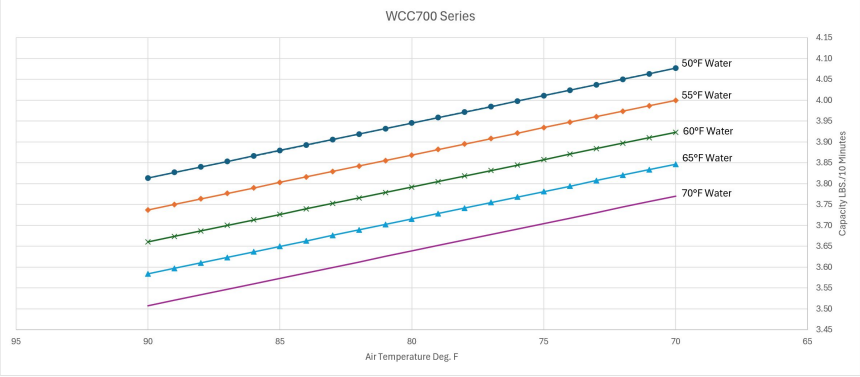
Test room climate class rating	Dry bulb temperature	Relative humidity	Dew point	Water vapor mass in dry air
4	30° C (86° F)	55% RH	20° C (68° F)	14.8 g/kg (11.56 oz/gal)

Temperature Chart

Table 3

Air Temp °F	Capacity @50°F Water	Capacity @60°F Water	Capacity @70°F Water
70	4.08	3.92	3.77
80	3.95	3.79	3.64
90	3.81	3.66	3.51

NOTE: All capacities are in LBS/10 Minutes and carry a tolerance of +/- 3%



DIMENSION DRAWING

WCC700-EAUS1

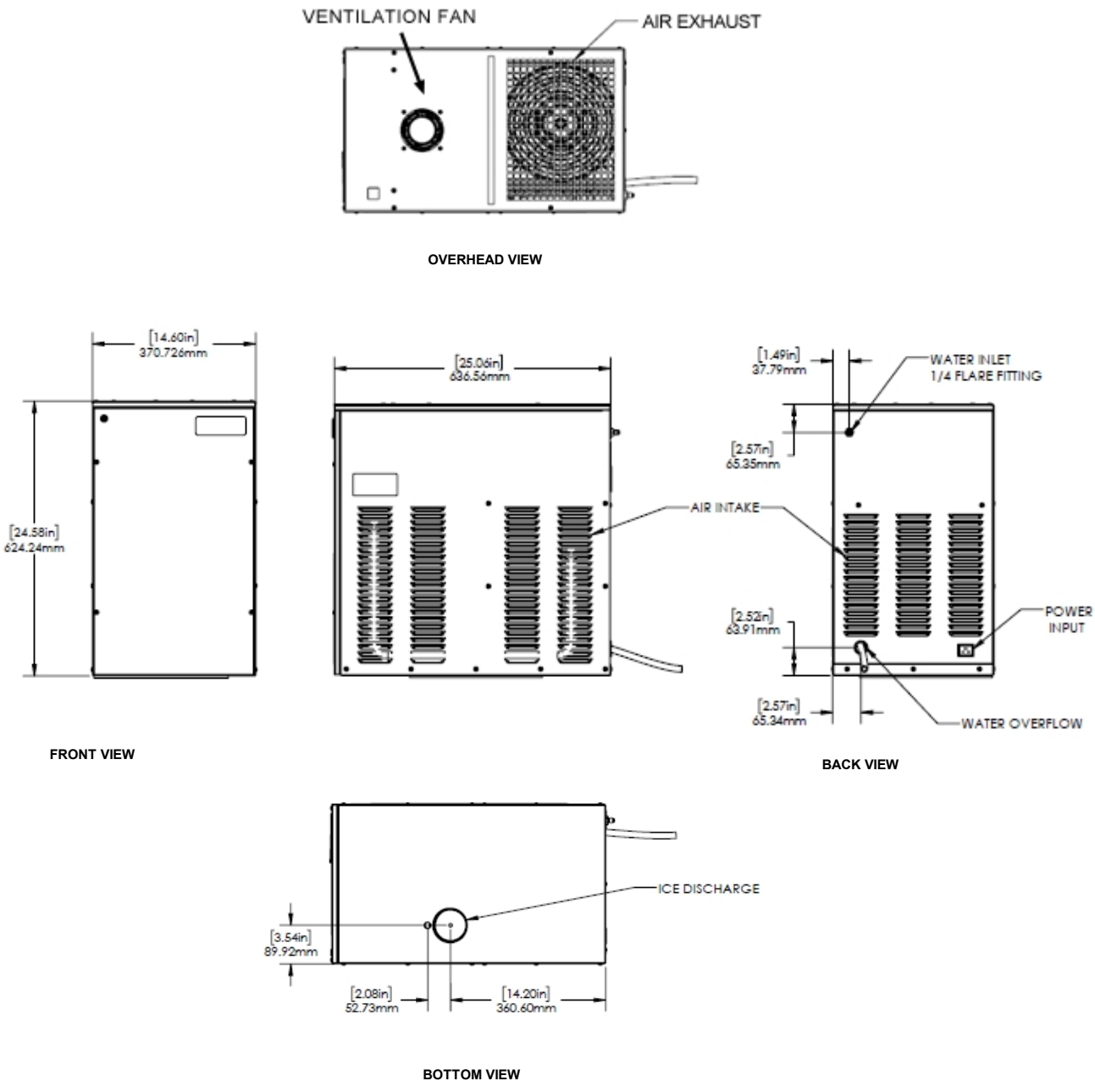


Figure 1.

DIMENSION DRAWING

WCC700-EAUS2

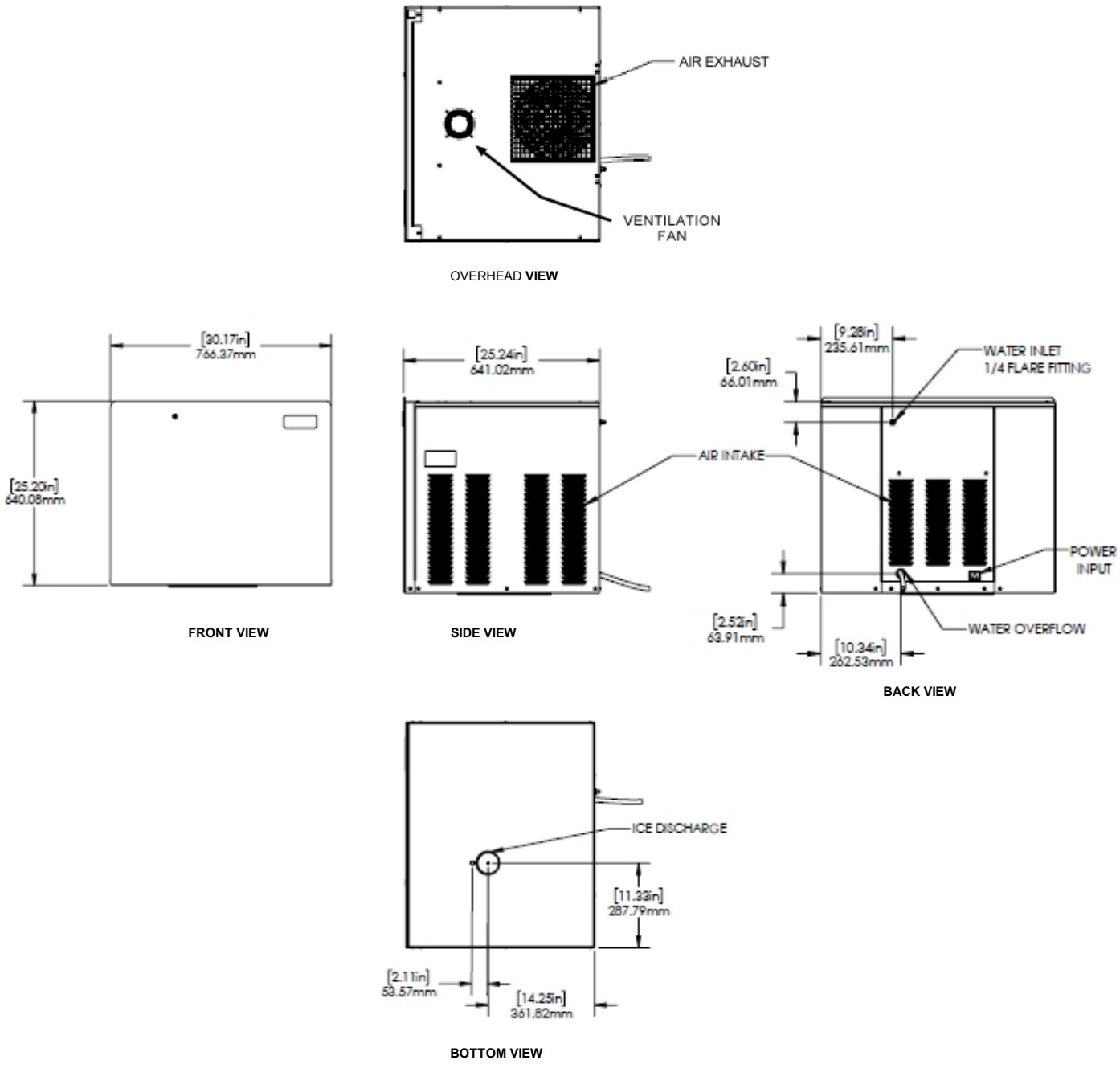


Figure 2.

INSTALLATION INSTRUCTIONS

This manual covers unpacking and inspection, selecting location, installing unit, and preparing for operation.

Remove Icemaker from Carton

Keep unit in the upright position, remove carton and pallet from unit and inspect unit for damage. Upon inspection of the unit, if any damage is found, file a claim with carrier immediately.

Before the removal of any icemaker cabinet panels, ensure that the unit is not plugged in.

Cabinet Removal – WCC700-EAUS1

1. **Top Panel** – Remove the 6 screws and lift upward. Do not remove the 4 screws surrounding the attached fan mounted to the top panel. Unplug the wiring harness attached to the fan and set the top panel aside.
2. **Front Panel** - Remove 4 screws and pull forward. Unplug the wiring harness attached to the cleaning light front panel and set the front panel aside.
3. **Side Panel** - Remove 9 screws and pull forward for the left or right side panels to remove.
4. **Back Panel** - Do not remove.

Cabinet Removal – WCC700-EAUS2

NOTE: This Sections Pertains to all 700-Series icemakers that contain the carbon front panel.

1. **Front Panel** - Remove 2 screws along bottom side edges of front panel and the 2 screws at the top of front panel. Lift panel up and pull forward. Unplug the wiring harness attached to the cleaning light front panel and set the front panel aside.
2. **Top Panel** - Remove the 10 screws and lift upward. Do not remove the 4 screws surrounding the attached fan mounted to the top panel. Unplug the wiring harness attached to the fan and set the top panel aside.
3. **Side Panels** - Remove 3 side screws, 1 back and pull forward for the left or right side panels to remove.
4. **Back Panel** - Do not remove.

Preparation of Installation Site

The refrigeration system on air-cooled units requires airflow; choose a well ventilated area for the unit location.

1. Install the unit in a room with a minimum area of 72.1 ft^2 (6.7 m^2).
2. **Ventilated Area -** Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.
3. A minimum of 5 inches (127 mm) must be maintained, free of any obstructions, for air intake through the back panel. At least one (or both) sides must maintain a minimum of 3 inches (76.2 mm) clearance without obstruction for air intake. Top clearance is required for air exhaust.
4. The unit can be installed either on an ice-storage bin or an ice dispenser using the proper adapter kits. (Refer to sales literature for information.) The install is kit (620075197) provided with each icemaker and adapter kits will supply everything to locate the unit correctly. In all cases the icemaker should be sealed all around the base with an NSF listed sealant. (63804815B)
5. The icemaker should not be located next to ovens, grills, or other high heat producing equipment.

Water Inlet Hook-up

1. **Water Inlet** - Fitting is a 1⁄4" (6.35mm) SAE male flare located at the rear of the unit. Connect water supply with a 1⁄4" (6.35mm) or larger copper or flexible tubing.

CAUTION:

Unit must be installed with only potable water.

NOTE: A shut-off valve with a loop of additional tubing for service is recommended.

2. **Water Pressure** - Unless otherwise specified, the unit is designed to operate on water pressures between 10 P.S.I. (0.69 MPa) and 90 P.S.I. (0.62 MPa). A recommended water supply is with temperatures between 50° F - 90° F (10° C - 32° C) with a pressure between 20-70 p.s.i (0.138 - 0.48 MPa).

   NOTE: For pressures above 90 P.S.I. (0.62 MPa) a regulator must be installed.

   NOTE: This equipment must be installed with adequate backflow protection to comply with applicable federal state and local codes.

3. **Filter** - IMF (Phosphate Feeder) Water Filters and Scale inhibitors are not recommended for use with the Continuous Flow Ice-Maker, Taste & Odor only should be used. Total dissolved solids in the water should be within the below specified limit

   Min dissolved solids = 270 PPM(TDS). Max dissolved solids = 500 PPM(TDS).

   NOTE: Water inlet for the Icemaker should not be with RO Filtration System. NOTE: Unit must be installed per local plumbing code.

Drain Connection

1. **Overflow Line -** is a 3/8" I.D. clear, plastic tubing located at the rear of the unit. Extend this line to connect to the proper drain per applicable local plumbing codes.

Electrical Supply

Power Access – is provided via a detachable 8 ft. 2 inch long (2.4 m) power cord with a 3-prong plug. The cord is attached via an electronic receptacle at the rear of the unit.

NOTE: Only trained and certified electrical technicians should replace the power cord or the unit should be returned to an Authorized Service Center for power cord replacement. The replacement cord must meet all requirements of the original equipment manufacturer.

NOTE: Unit must be installed with a dedicated and appropriately rated fuse or circuit breaker, per Table 1.

NOTE: Unit must be installed according to all required local, state and national electrical codes.

NOTE: Unit must be grounded.

NOTE: Use of GFCI/GFI circuit protection is generally not recommended for this type of appliance to reduce the possibility of nuisance trips. However, if the circuit protection is required per code, a GFCI/GFI breaker is preferred rather than an outlet type.

CAUTION:

Failure to comply could result in serious injury, death or damage to the equipment

Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges, or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Checks To Electrical Devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily resolved. Report this to the owner of the equipment, so all parties are advised.

Initial safety checks include:

a) that capacitors are discharged: this must be done in a safe manner to avoid possibility of sparking;

b) that no live electrical components and wiring are exposed while charging, recovering or purging the system;

c) that there is continuity of earth bonding.

Repairs To Sealed Components

During repairs to sealed components, all electrical supplies must be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during repair procedures, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

NOTE: Typical service will require power to be applied to the device to reset the cleaning timer.

Particular attention must focused on the following to ensure that when working on electrical components, the casing is not altered in such a way that the level of protection is affected. This includes damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres. Replacement parts must be in accordance with the manufacturer’s specifications

WIRING DIAGRAM

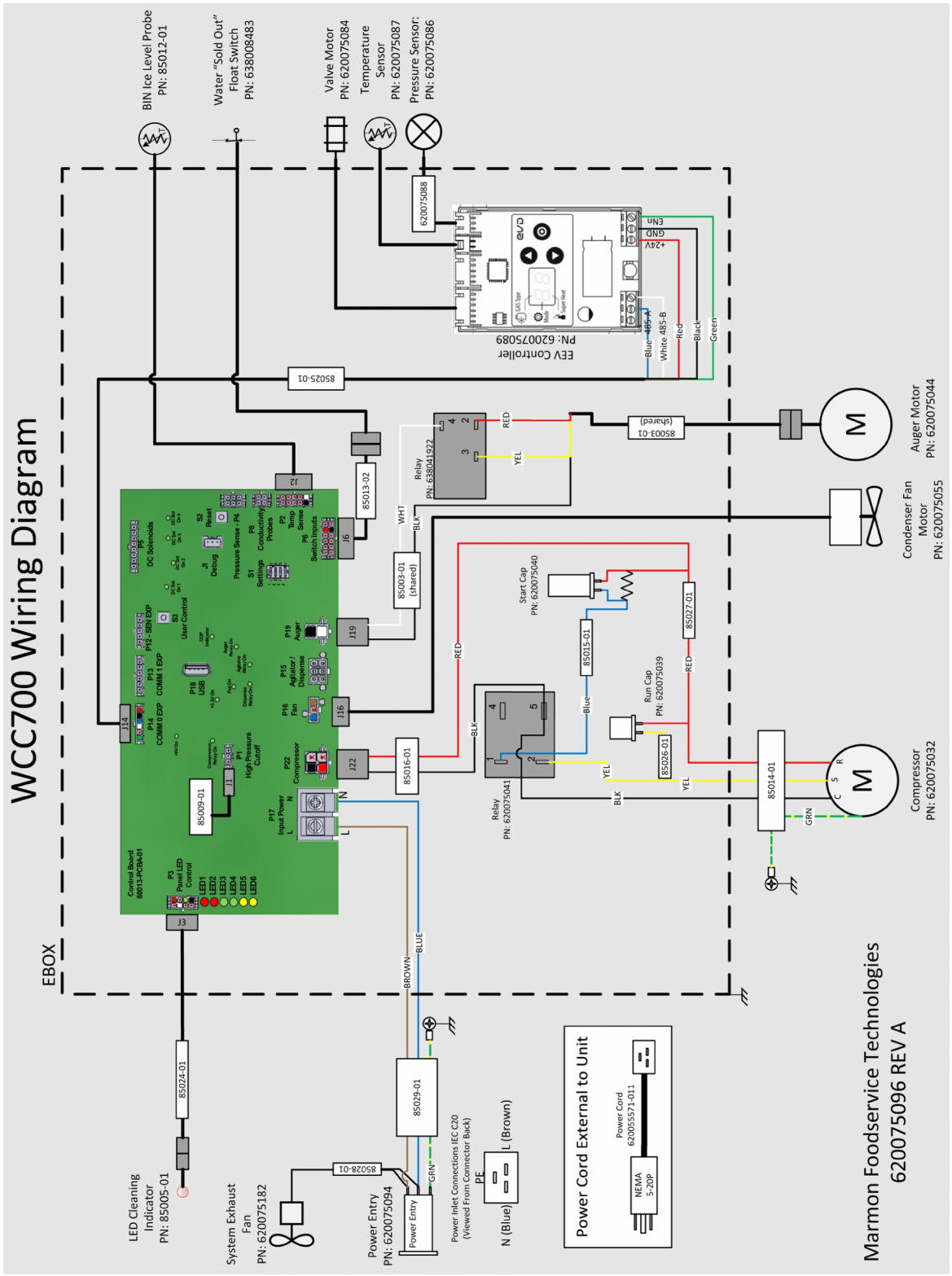


Figure 3. Schematic and Wiring Diagram WCC700-EAUS1 and WCC700-EAUS2

Auger Engagement

Make certain that the auger is fully engaged to lower drive motor and that the extruder head is fully engaged into the evaporator. Perform the following procedure to engage the auger properly.

1. Install the extruder head on top of the evaporator, as shown in Figure 4.

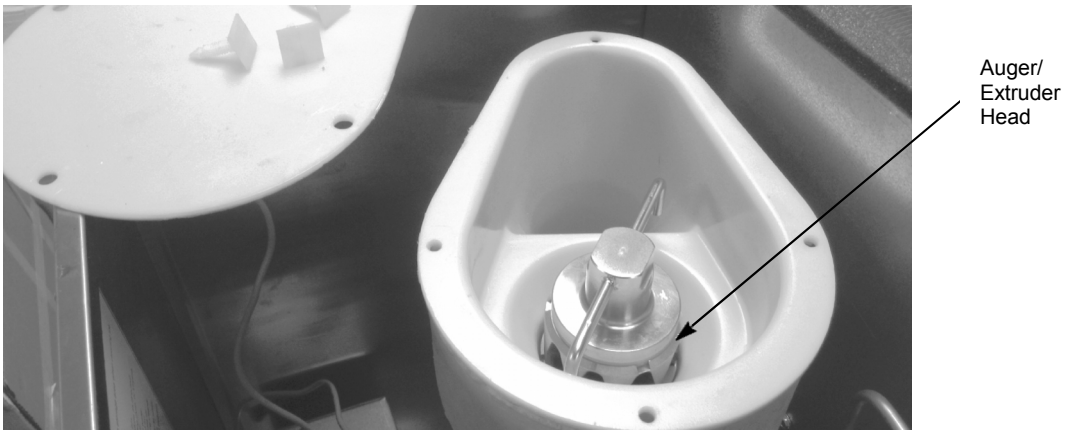


Figure 4.

2. When the auger is lowered into the evaporator, rotate the auger to engage the motor drive shaft, as shown in Figure 5.

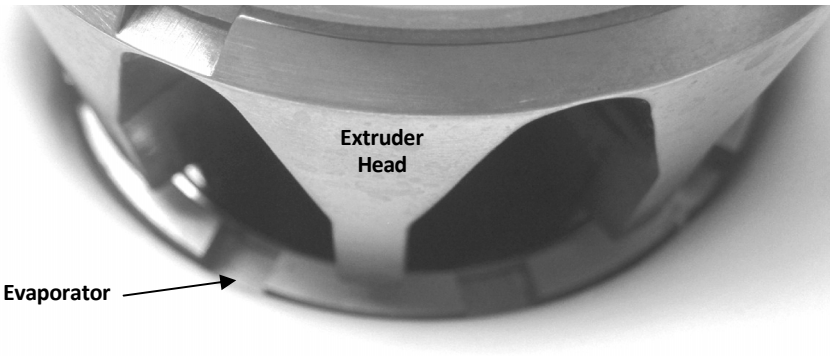


Figure 5.

3. Carefully rotate the extruder head until the tabs on the extruder head drop into the slots on the evaporator plate, as shown above. When the auger/extruder head assembly is rotated to the proper position, it will drop about 1/4 inch to more fully engage the motor drive shaft.

NOTE: Not all the tabs are the same width. Therefore, you must rotate the auger until all the tabs are properly aligned with the evaporator slots. This may require almost a complete rotation of the extruder head to complete. (See Fig. 6 on next page.)

⚠ CAUTION:

Keep hands out of the way when rotating the extruder head. When the auger is aligned, it drops down quickly and a finger may be pinched due to the weight of the auger/extruder head assembly.

IMPORTANT: Failure to lock the extruder head tabs into the evaporator slots causes the auger to be out of proper alignment with the evaporator. This may cause excessive loads on the auger that can potentially result in excessive noise and tripping the drive motor overload.

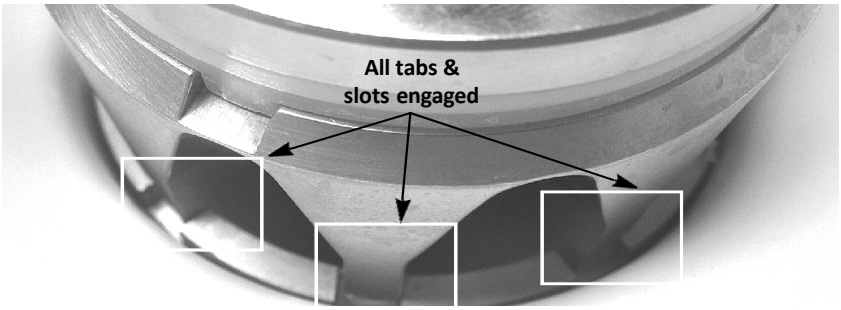


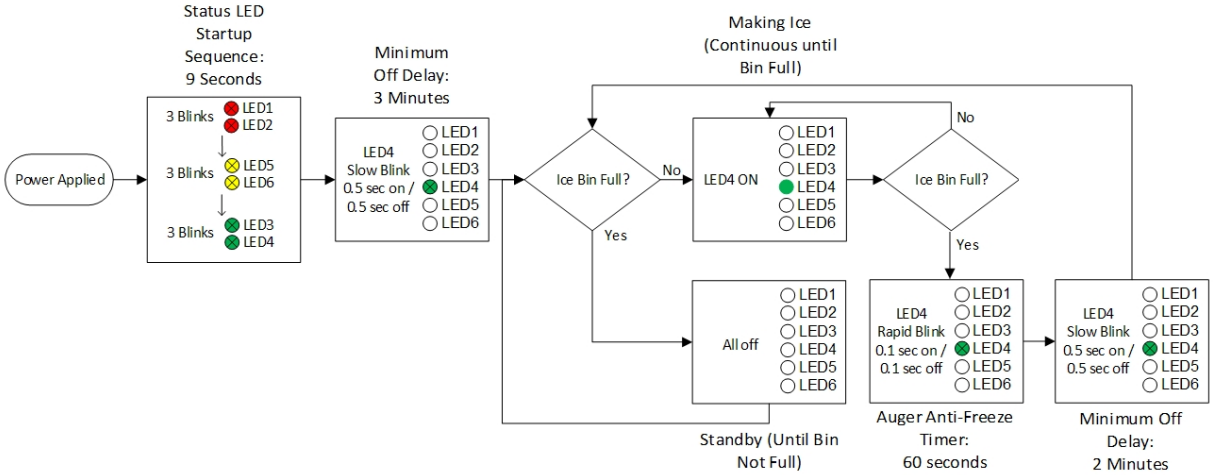
Figure 6.

Initial Start Up, Checks and Adjustment Instructions

NOTE: Do not start unit before completing installation steps on the previous page.

Turn on water supply and plug in the power cord to power-up the icemaker.
NOTE: The unit has a timed delay between plug in and the start of ice production: **3 minutes**.

Flowchart 1 shows the typical start up Ice Making Status LED sequence. Note: This flowchart assumes no errors.



Flowchart 1.

NOTE: For LED location and detailed information, refer to the ELECTRONIC CONTROLLER OVERVIEW AND TROUBLESHOOTING section.

Perform the following system checks:

NOTE: If unit will not start be sure water reservoir is full. Low water safety control must be properly adjusted to start and shut down unit. If water level drops below bottom of reservoir, unit must shut down. Adjustment is made by moving magnet up or down.

Water Level - If necessary adjust the float by bending the float arm up or down as needed, push float assembly down until unit stops running. Release float and unit will restart. Keep water in reservoir at level line while unit is in operation.

Low Water Safety Control - Adjust magnet by bending magnet arm as needed to shut unit down if water level drops below bottom of reservoir.

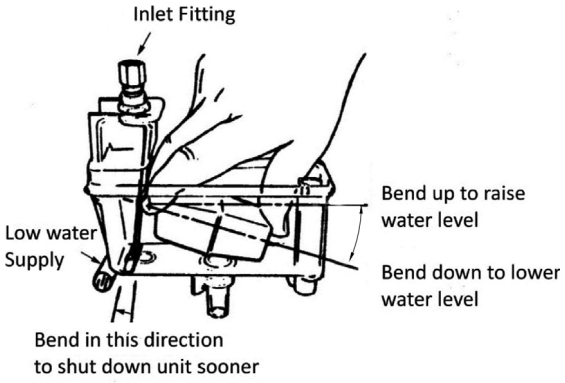


Figure 7. Icemaker Float Assembly

Bin Control Check- Place ice around probe, unit should shut down in one minute. Remove ice from around probe, unit should start within four (4) minutes.

Initial Cleaning & Sanitizing – Perform the initial cleaning process, see procedure below.

NOTE: See Flowchart 1 for Panel Indicator startup sequence.

NOTE: If any of these checks or adjustments cannot be achieved, refer to the service sections of this manual or call for factory assistance at 1-800-238-3600.

Icemaker Cleaning and Sanitizing Procedures

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. Disconnect power to the unit before servicing. Follow all lock out/ tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

⚠ WARNING:

Cleaning solution must be safe for stainless steel. NO EXCEPTIONS.
Do not use any of the ice made during cleaning operations.
Clean and sanitize the ice storage area when cleaning icemaker.

1. Turn icemaker off (unplug power cord) and shut off water supply.
2. Remove ice from storage bin.
3. Remove the front, top and side panels to access the required components.
4. Mix approved cleaner (2 gallons as directed). **Recommended cleaning solution:** Nu-Calgon Nickel-Safe Liquid Ice Machine cleaner. **Mixture:** Per cleaner manufacturer recommendation.
5. Clean auger and diverter assembly and ice transition/drop tube in a sink using cleaner mixture and reinstall in icemaker. Using cleaner, wipe down the dispense tray.
6. Turn machine on and add cleaner solution to water level control until 2 gallons have been used.
7. Turn on water supply and run machine for 15 minutes.
8. Turn off machine and remove all ice.
9. Sanitize using non-scented **household liquid bleach** (50 ppm chlorine). **Mixture:** 1 fluid ounce per gallon room temperature water. 2 minute exposure time.
10. Sanitize auger and diverter assembly and ice transition/drop tube in a sink using sanitizing solution and reinstall in icemaker. Using sanitizer, wipe down the dispense tray. Failure to dry and remove sanitizer may result in freezing of sanitizing solution within evaporator and stoppage of ice production.
11. Fill icemaker with sanitizer by slowly pouring solution into water feed reservoir until full. Drain solu-tion from reservoir and evaporator. **Do not run machine. Allow to air dry.** Failure to dry and remove sanitizer may result in freezing of sanitize solution within evaporator and stoppage of ice production.
12. If icemaker is used in conjunction with ice dispenser or storage bin, follow manufacturer's recommended cleaning instructions at this time.
13. Reset Cleaning light: Plug in power cord to start unit. Hold Reset button (indicated below) down for five (5) seconds and cleaning light will turn off.
14. Reinstall the access panels.

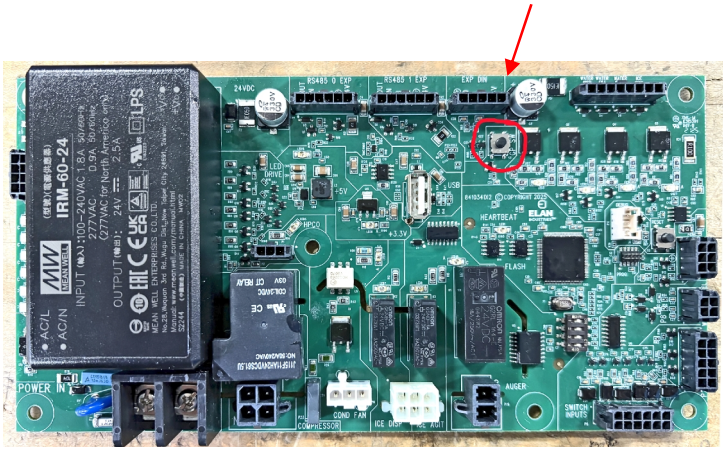


Figure 8. Cleaning Reset Button on PCB

MAINTENANCE

Preventive maintenance can increase the trouble free life of your icemaker. Many authorized service agencies offer service contracts for your icemaker. Contact your local distributor for further information. Maintenance procedures covered in this manual are not covered by the warranty.

Monthly

Clean the condenser. Use a brush, vacuum cleaner or blow from outside the condensor, top down, with compressed air. Inspect water feed reservoir at least once a month until a definite pattern for cleaning and sanitizing has been established.

Quarterly

Verify time setting with cleaning light. (90 days). This is the maximum period of time between cleaning and sanitizing the icemaker. In addition to recommended monthly procedure, and if a more frequent cleaning and sanitizing pattern has not been established, unit must be cleaned and sanitized. NOTE: The cleaning light will be on until the unit is cleaned and the light is manually reset.

Semi-Annually

Semi–Annually, in addition to all previously established service procedures, perform the following:

1. Check for water leaks in tube connections, water fittings and lower icemaker water seal.
2. Check drain tubes for clogs and aged tubes. Replace if tubes are stained or brittle.
3. Check for signs of condensation. Clean where necessary and replace insulation properly.
4. Check safety circuits for proper operation.
5. Check refrigeration system.
6. Check unit for abnormal noise. Tighten machine and cabinet screws, if necessary.
7. Check white upper bearings on auger assembly. If bearings are less than 1⁄16” thick, replace.

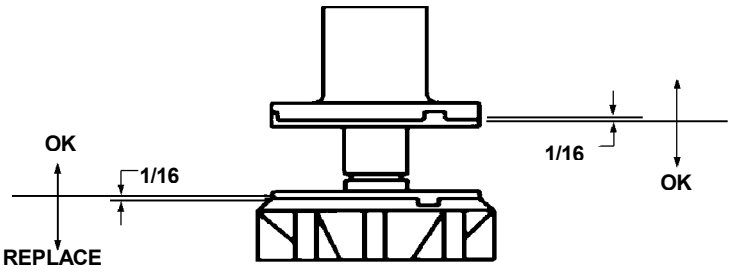


Figure 9. Upper Nut and Bearing Assembly

WATER LEVEL CONTROL

How the Water Level Control Works

When water is introduced through the inlet fitting, the float rises. The float pushes against a lever which forces the poppet assembly against the inlet fitting valve seat which seals the water off. Before the water inlet is sealed the safety switch is activated. In the event of a water failure, the float would drop down and operate the safety switch to shut off the machine.

If the water level control will not shut off and seal at level as indicated, be sure inlet pressure does not exceed the recommended factory operating range.

Under ordinary circumstances, adjustment should not be necessary providing it was properly adjusted when the unit was installed or relocated. If, however, the control becomes inoperative, repair or replace it. Refer to **Initial** Start Up, Checks and Adjustment Instructions shown previously.

Purpose

1. To automatically maintain proper water level in the evaporator when unit is running and making ice.
2. A safety switch is activated in the event of an interruption in water supply. The switch shuts off the electrical power to the icemaker and to its refrigeration system. The switch will reset after the cause of water failure has been corrected and the water level in the icemaker returns to normal.
3. The transparent bowl not only provides a visible check of water level, but it's also a good guide to the internal conditions within the icemaker assembly itself. (See Cleaning Procedure.)

Replacing the Water Level Control

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

⚠ WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Shut off the water supply. Shut off the main power switch or unplug the ice dispenser from the electrical outlet.
2. Remove the flexible tubing from the bottom of water level control and drain the water from the water level control and evaporator.
3. Remove the flexible tubing at the bottom of the water-level bowl connected to the overflow.
4. Hold the water inlet fitting with a suitable tool to prevent it from rotating when disconnecting the water inlet.
5. Remove the wing nut holding the water control to its mounting bracket. Remove the water control by lifting it straight up.

Replacing the Water Level Safety Switch

WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Unplug the ice dispenser from the electrical outlet.
2. Unplug the Molex connector connecting the switch to the electrical box.
3. Remove the 2 screws anchoring the water level safety switch to the bottom of the water level control mounting bracket.

MOUNTING CHUNKLET ICEMAKER ON A CORNELIUS DISPENSER

Description of Potential Issue

There may be multiple issues that will affect this continuously running icemaker regarding ice detection. Issues most commonly stem from placement of the thermostat in the dispenser storage area.

Corrective Action

Ensure that the mechanical and electronic thermostats are set up properly. Please refer to the previous section regarding Installation for proper set up of the thermostat controls.

Additional Information

NOTE: Proper dispensing of chunklet, cubelet, or nugget ice from a Cornelius Ice/Bev Combo dispenser is dependent on the proper setup of the Beverage Dispenser, and proper setup of the Chunklet icemaker. Please refer to Cornelius Soft Ice Dispensing Tips for specific set-up instructions.

- The electronic thermostat should be positioned according to the instructions included with the extended drop tube kit (629097846).
- Please reference the Soft Ice Dispensing Tips for specific drop tube extension kits needed for various models of Cornelius dispensers.

Compressed Ice Adjustments

- Off Cycle Agitation
- Ice Diverter
- Restrictor Plate
- Ice Slide
- Ice Bin Level Setting
- Water Quality Water Filtration

Optional Accessories

All Cornelius models can be retrofitted to dispense soft ice by adding a soft ice kit.

ED150/175
Part #629088514
Consists of an ice diverter and an agitator (Figs. 10 & 11)

ED/DF200
Part #629088508
Consists of an ice diverter and an ice slide (Figs. 10 & 12)

ED/DF250
Part #629088507
Consists of an ice diverter and an ice slide (Figs. 10 & 12)

ED300
- Part #629088644
- Consists of two ice diverters and two agitators (Figs. 10 & 11)

Flavor Fusion / Flavor Overload / IDC
Part #620920419
Consists of an ice slide (Fig. 12)

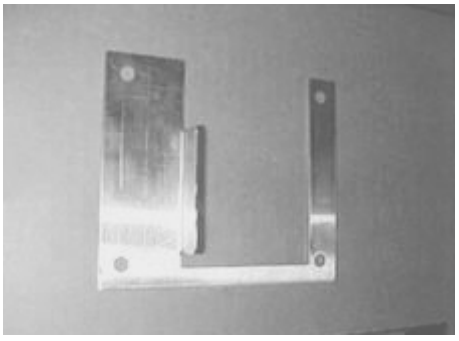


Figure 10. Ice Diverter for ED/DF models

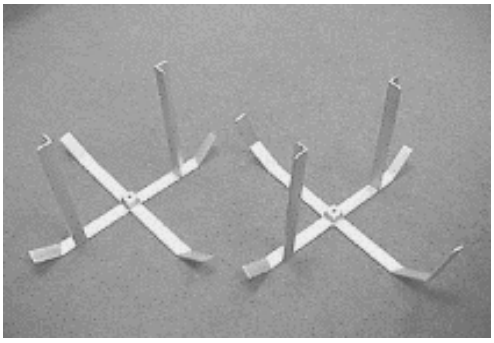


Figure 11. ED150/175 & 300 Agitators

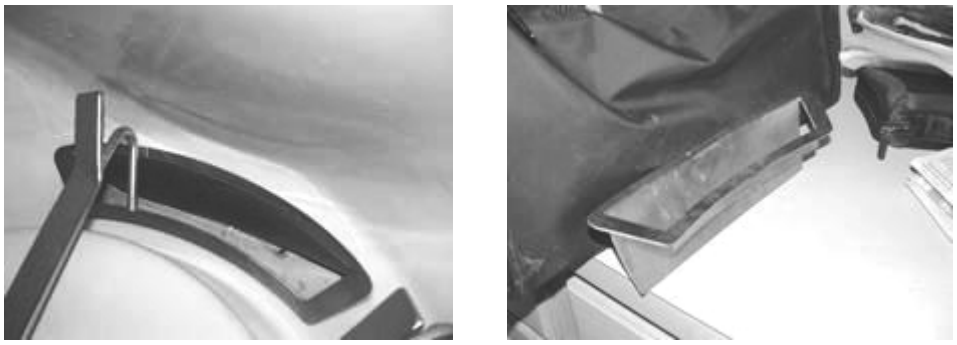


Figure 12. ED/DF2XX and Flavor Fusion Ice Slides

Off Cycle Ice Agitation

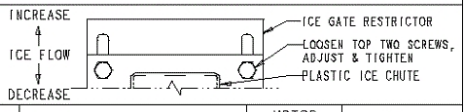
- Fully adjustable
- Prevents ice from bridging
- Ensures ice on Cold Plate
- Allows ice bin to be filled when top mounting an icemaker
- Prevents over agitating the ice
- For soft ice adjust to run for ½ - 1 second every 3 hours

DANGER: ELECTRIC SHOCK HAZARD. DISCONNECT POWER BEFORE SERVICING UNIT.

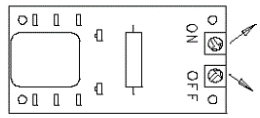
ATTENTION: RISQUE DE CHOC ELECTRIQUE COUPER L'ALIMENTATION AVANT LE DEPANNAGE.

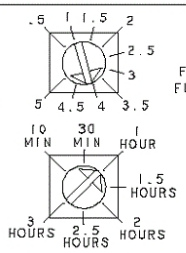
CAUTION:
DISCONNECT POWER TO DISPENSER BEFORE MAKING ADJUSTMENTS.

IMPORTANT NOTE:
IF ICE CHUTE IS REMOVED OR LOOSENED, CHECK ICE GATE RESTRICTOR FOR PROPER SETTING.



AGITATION TIMER





MOTOR ON TIME
FULL CCW - .5 SECOND
FULL CW - 5 SECONDS

OFF TIME
FULL CCW - 10 MINUTES
FULL CW - 3 HOURS

620919369 REV B

MODEL	ICE FILL/ ICE TYPE	MOTOR ON TIME (SECONDS)	OFF TIME
150, 200 & 250, 300, B, BC	MANUAL/ HARD ICE (CUBE)	4	1 HOUR
150, 200 & 250, 300, B & BC	AUTOMATIC (TOP-MOUNT ICE-MAKER)/ HARD ICE (CUBE)	2	20 MINUTES
150 & 200, 250 B & BC	MANUAL & AUTOMATIC/ SCOTSMAN COMPRESSED ICE	2	3 HOURS
150 & 200, 250 B & BC	MANUAL & AUTOMATIC/ WILSHIRE & HOSHIZAKI COMPRESSED ICE	2	3 HOURS

B - BEVERAGE C - COLDPLATE

Figure 13.

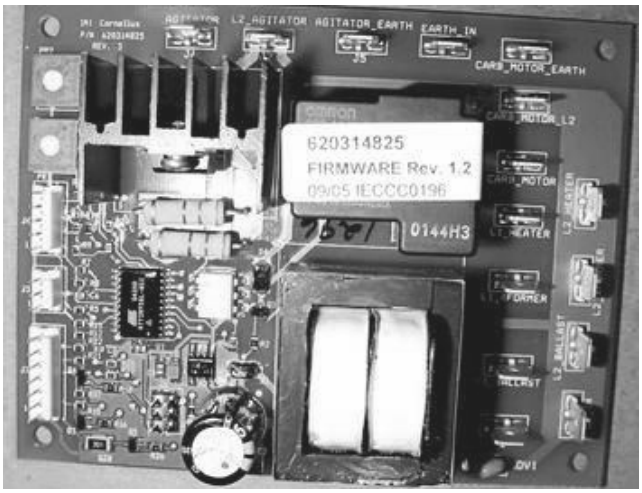


Figure 14.

Ice Diverter

The purpose of the ice diverter is to help move the ice into the ice chute. All ED models use diverter p# 02394. The ED300 uses a second diverter for the right side chute, part # 620029002. For IDC/FF/FO models the diverter is molded into the bin and if necessary an optional diverter is available, part # 629097086.

Ice Slide

The ice slide allows the ice to move from the bin onto the cold plate. It is required for all 30" wide dispensers. Install the ice slide into the ice drop zone inside the bin.

- Allows ice to move freely from the bin to the cold plate
- Prevents the ice from compressing at the drop zone

Figure 15. Ice Diverter

Figure 16. Ice Slide

Figure 17. For 22" and 44" wide units special agitators are used in place of the diverter.

Gearmotor

The gearmotor is equipped with a start relay located in the Ebox and a manual reset overload on the motor.

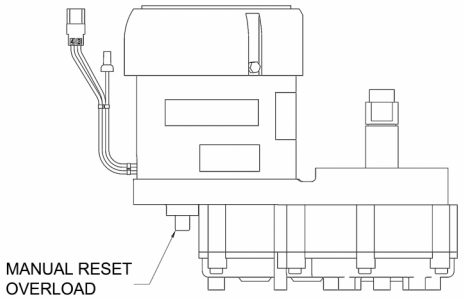


Figure 18. Motor Reset

When current is applied, the relay energizes and completes the circuit to the start winding. The motor reaches a predetermined speed and the relay drops out, disconnecting the start winding. The run winding remains in the circuit if current is applied.

Purpose & Operation

The purpose of the overload is to automatically shut off the motor in the event of a mechanical binding of the transmission, an overload condition within the evaporator or an electrical malfunction. It does this by sensing amperage draw. If the motor stalls the start relay would energize and stay energized. The amperage would surge 5 to 6 times greater than the normal draw. In this event the overload would shut off the transmission in 4 to 8 seconds.

If the motor is subjected to an abnormal load, but does not reach a stall condition, the overload will react, but over a greater period of time. The reaction time depends upon the amperage to which it is subjected.

Bin Control

The type of bin control used on all WCC Models is an electronic control.

The sensing element is located in a 5⁄16” stainless steel tube that hangs from the dispense tray cover down through the center of the drop tube.

To test the control, start the icemaker and block the outlet tube. When the ice fills the drop tube to about 1⁄2 full the icemaker should shut off. When the tube is cleared, the icemaker should restart within 5 minutes.

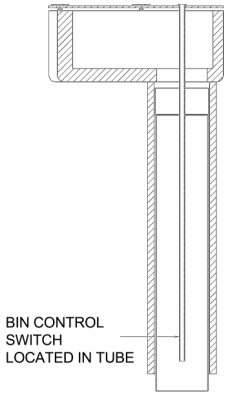


Figure 19. Bin Control Switch

The sensing element can be removed by pulling the cable located on the top of the dispense tray cover. When replacing the sensor make sure the bulb is inserted to the bottom of the thermostat well.

Panel Indicator

The ice maker is equipped with a multicolor indicator visible on the front panel of the unit. This indicator shows if a cleaning reminder counter has expired and/or if there is an error resulting in non-operation of the unit. The normal condition of the indicator is off.

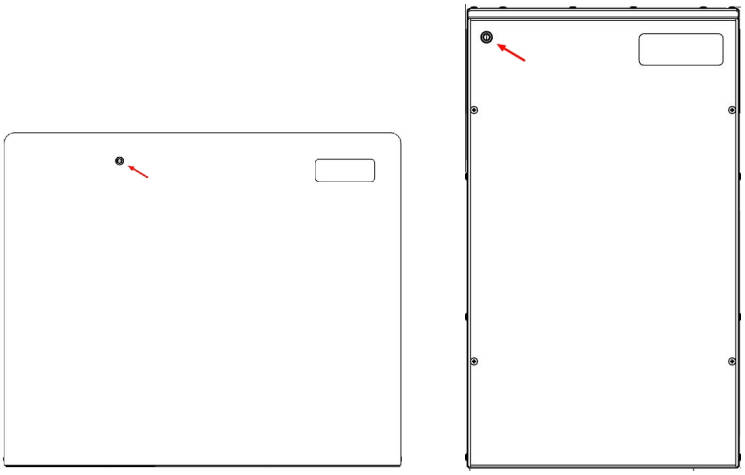


Figure 20. Panel Indicator

The indicator will illuminate solid yellow if the total operating time has exceeded 90 days since the last cleaning.
Note: The counter does not increment if the ice maker is not powered. If the unit is stored for an extended amount of time, the operator should clean the unit before reinstalling it.

CAUTION:

The icemaker will not halt ice production based on the expiration of this cleaning reminder counter, however, continued use may result in inefficient ice production and/or damage to the equipment.

The panel indicator will illuminate red if an error has occurred in the unit that prevents ice making. There are multiple error codes indicated by a series of flashes. Refer to the service section for additional details. Refer to the LED1 fault definitions in section ELECTRONIC CONTROLLER OVERVIEW & TROUBLESHOOTING.

REFRIGERATION SYSTEM

Qualified Service Personnel

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

⚠ WARNING:

Disconnect power to the unit before servicing following all lock out/tag out procedures established by the user. Verify all of the power is off to the unit before any work is performed. Failure to disconnect the power could result in serious injury, death or equipment damage.

Checks To The Work Area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized. For repair to the refrigerating system, the following shall be completed prior to conducting work on the system. Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e., nonsparking, adequately sealed, or intrinsically safe.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available on hand. A dry chemical or CO_2 fire extinguisher should be adjacent to the charging area.

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment shall be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Preparation of Installation Site

The refrigeration system on air-cooled units requires airflow; choose a well ventilated area for the unit location.

1. Install the unit in a room with a minimum area of 72.1 ft2 (6.7 m2).
2. Ventilated Area - Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and pref-erably expel it externally into the atmosphere.

3. A minimum of 5 inches (127 mm) must be maintained, free of any obstructions, for air intake through the back panel. At least one (or both) sides must maintain a minimum of 3 inches (76.2 mm) clearance without obstruction for air intake. Top clearance is required for air exhaust.
4. The unit can be installed either on an ice-storage bin or an ice dispenser using the proper adapter kits. (Refer to sales literature for information.) The install is kit (620075197) provided with each icemaker and adapter kits will supply everything to locate the unit correctly. In all cases the icemaker should be sealed all around the base with an NSF listed sealant.
5. The icemaker should not be located next to ovens, grills, or other high heat producing equipment.

Checks To The Refrigeration Equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:
the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed;

the ventilation machinery and outlets are operating adequately and are not obstructed;
if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;
refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Detection of Flammable Refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity might not be adequate, or might need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed.

Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine can react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

Removal And Evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed, since flammability is a consideration. The following procedure shall be adhered to:

safely remove refrigerant following local and national regulations;

purge the circuit with inert gas;

evacuate (optional for A2L);

purge with inert gas (optional for A2L);

open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants. This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed.

Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.

Cylinders shall be kept in an appropriate position according to the instructions.

Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.

Label the system when charging is complete (if not already).

Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Refrigeration System Adjustments

A complete understanding of the icemaker and hermetic refrigeration system is necessary before any adjustments are made. The refrigeration technician must use high and low side pressure readings, water and air temperatures, plus general conditions of cleanliness to assess the refrigeration system status when making any adjustments.

All icemaker products are tested and adjusted at the factory prior to shipment where the ambient temperature ranges from 65° to 90°F, depending on the season of the year.

Whenever a new icemaker product is initially installed and started–up, it is imperative that the start–up operation make the following checks and/or readjustments for local conditions.

Electronic Expansion Valve (EEV)

You will find an electronic expansion valve on icemakers (some models), which is used to control the amount of refrigerant flowing through the evaporator. Improperly installed or defective expansion valves may cause low production, soft ice, squeaking from evaporator and excessive load inside evaporator.

By using general refrigeration system troubleshooting along with the pressure charts you can easily determine whether or not the expansion valve is working properly.

Adjustment and Troubleshooting

The Electronic Expansion Valve (EEV) is a self-adjusting subsystem that uses a motorized valve and control board to control the flow of refrigerant based on the icemaker environment. The system is not to be adjusted or reprogrammed by the user and has a default superheat value of 23. If you believe your EEV is not working properly based on the pressure charts, please contact the service provider for additional information.

NOTE: Units with electronic expansion valve—valve with motor is located on bottom refrigerant line. The sensing probe is located on top refrigerant line.

⚠ CAUTION:

Very high discharge pressure is present in system. Using quick-disconnects on you gauge will minimize danger and loss of refrigerant. Comply with federal regulations for reclaiming refrigerant.

EEV Temperature Sensing Probe Installation

If the unit is exhibiting ice-production inconsistencies, the EEV temperature probe position may have changed. Ensure that it is oriented and secured according to the images and procedure shown below.

1. Peel back the insulation from the evaporator tube to expose the probe.
2. Adjust the probe to either a 10 or a 2-o'clock position relative to the evaporator tube as shown.
3. Confirm that the probe and cable positions are correct. If they are correct but operating issues persist, continue to step 4 (for replacement-procedure details.)

Figure 21. EEV Temperature Sensing Probe Installation

4. Remove the probe. Clean the evaporator tube of old thermal mastic paste.
5. Apply new thermal mastic paste at either the 10 or 2 o'clock position.
6. Place the new probe onto the paste and secure it with the built-in probe tie.
7. Wind the probe cable around the tube, at least 3 turns, and secure with two cable ties.
8. Close and re-tape the insulation around the probe so that no bare copper is visible.
9. Route the new probe wiring per the wiring diagram.

EEV Motor Nut Adjustment

When installing the EEV motor (stator) nut, ensure that it is properly tightened as shown below.

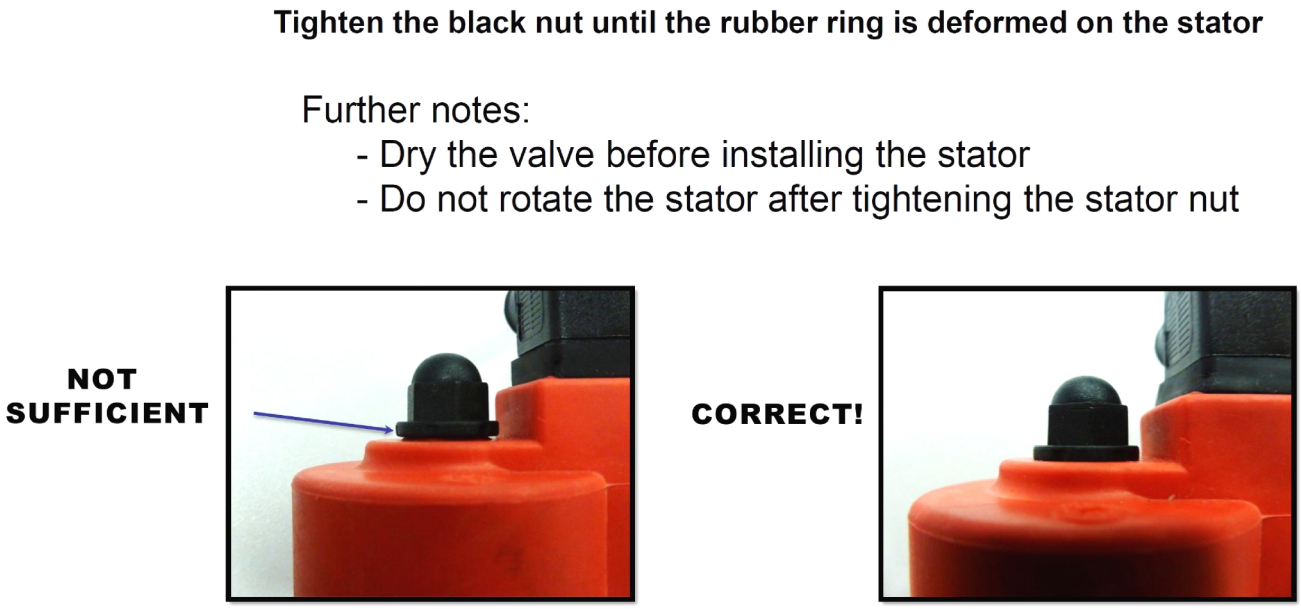


Figure 22. EEV Motor Nut Installation

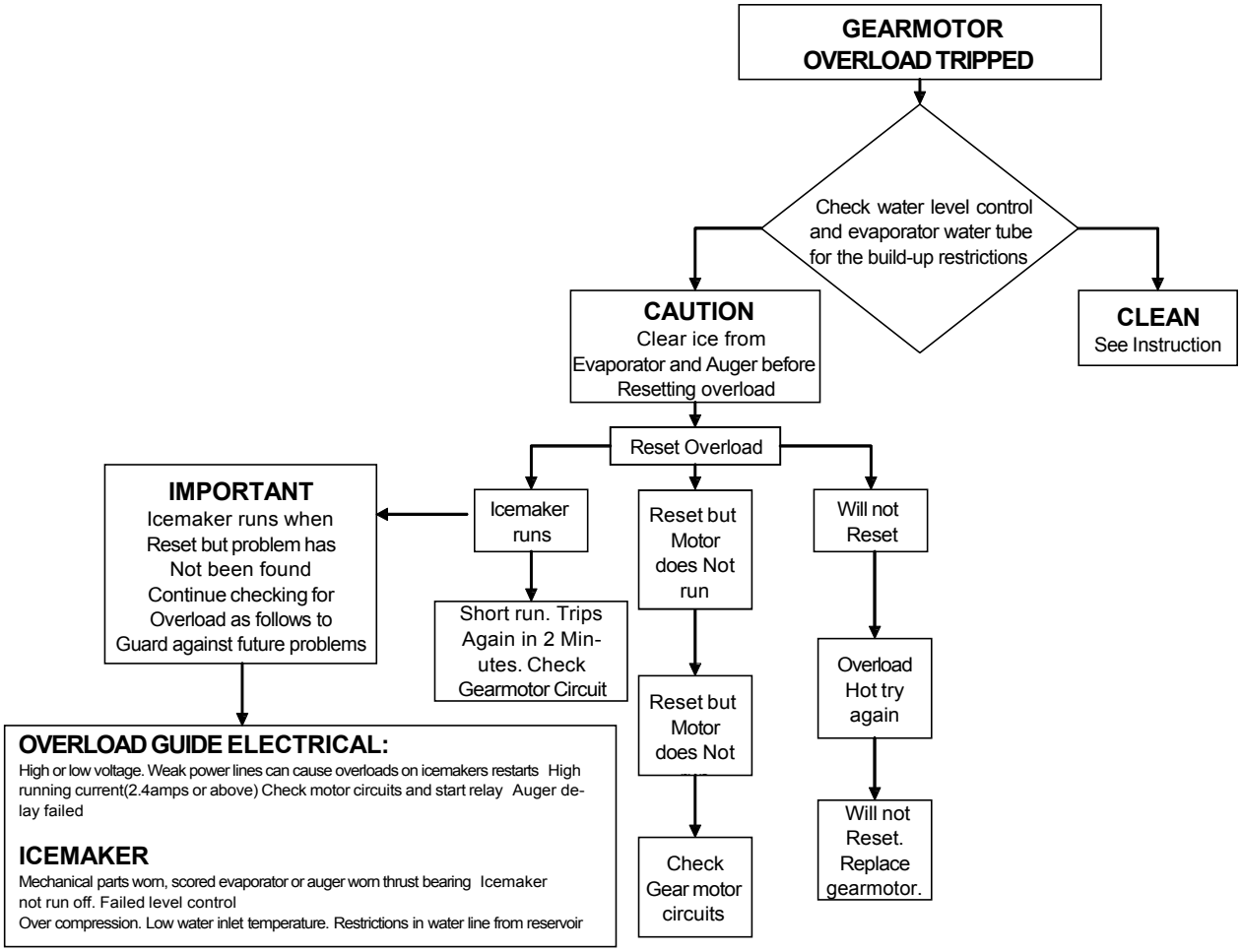
EEV Advanced Troubleshooting Guide

The following table lists a series of possible malfunctions that may occur when starting and operating the driver and the electronic valve. These cover the most common problems and are provided with the aim of offering an initial response for resolving the problem.

PROBLEM	CAUSE	SOLUTION
The superheat value measured is incorrect	The probe does not measure correct values	Check that the pressure and the temperature measured are correct and that the probe position is correct. Make sure the correct pressure probe has been set. Check the correct probe electrical connections.
	The type of refrigerant set is incorrect	Check and correct the type of refrigerant parameter.
Liquid returns to the compressor during control	The superheat set point is too low	Increase the superheat set point. Initially set it to 11 K and check that there is no longer return of liquid. Then gradually reduce the set point, always making sure there is no return of liquid.
	Low superheat protection ineffective	If the superheat remains low for too long with the valve that is slow to close, increase the low superheat threshold and/or decrease the low superheat integration time. Initially set the threshold 3 °C below the superheat set point, with an integration time of 3-4 seconds. Then gradually lower the low superheat threshold and increase the low superheat integration time, checking that there is no return of liquid in any operating conditions.
	Stator broken or connected incorrectly	Disconnect the stator from the valve and the cable and measure the resistance of the windings using an ordinary tester. The resistance of both should be around 40 ohms. Otherwise replace the stator.
	Valve stuck open	Check if the superheating is always low (<2 °C) with the valve position permanently at 0 steps. If so, set the valve to manual control and close it completely. If the superheat is always low, check the electrical connections and/or replace the valve.
	The "valve opening at start-up" parameter is too high on many cabinets in which the control set point is often reached (for multiplexed cabinets only)	Decrease the value of the "Valve opening at start-up" parameter on all the utilities, making sure that there are no repercussions on the control temperature.
Liquid returns to the compressor only after defrosting (for multiplexed cabinets only)	The superheat temperature measured by the driver after defrosting and before reaching operating conditions is very low for a few minutes	Check that the LowSH threshold is greater than the superheat value measured and that the corresponding protection is activated (integration time >0 s). If necessary, decrease the value of the integration time.
	The superheat temperature measured by the driver does not reach low values, but there is still return of liquid to the compressor rack	Set more reactive parameters to bring forward the closing of the valve: increase the proportional factor to 30, increase the integration time to 250 s.
	Many cabinets defrosting at the same time	Stagger the start defrost times. If this is not possible, if the conditions in the previous two points are not present, increase the superheat set point and the LowSH thresholds by at least 2 °C on the cabinets involved.
	The valve is significantly oversized	Replace the valve with a smaller equivalent.
Liquid returns to the compressor only when starting the controller (after being OFF)	The "valve opening at start-up" parameter is set too high	Check the calculation in reference to the ratio between the rated cooling capacity of the evaporator and the capacity of the valve; if necessary, lower the value.
The superheat value swings around the set point with an amplitude greater than 4°C	The condensing pressure swings	Check the controller condenser settings, giving the parameters "blander" values (e.g. increase the proportional band or increase the integration time). Note: the required stability involves a variation within +/- 0.5 bars. If this is not effective or the settings cannot be changed, adopt electronic valve control parameters for perturbed systems
	The superheat swings even with the valve set in manual control (in the position corresponding to the average of the working values)	Check for the causes of the swings (e.g. low refrigerant charge) and resolve where possible.
	The superheat does NOT swing with the valve set in manual control (in the position corresponding to the average of the working values)	As a first approach , decrease (by 30 to 50 %) the proportional factor. Subsequently try increasing the integration time by the same percentage. In any case, adopt parameter settings recommended for stable systems.
	The superheat set point is too low	Increase the superheat set point and check that the swings are reduced or disappear. Initially set 13 °C, then gradually reduce the set point, making sure the system does not start swinging again and that the unit temperature reaches the control set point.
In the start-up phase with high evaporator temperatures, the evaporation pressure is high	MOP protection disabled or ineffective	Activate the MOP protection by setting the threshold to the required saturated evaporation temperature (high evaporation temperature limit for the compressors) and setting the MOP integration time to a value above 0 (recommended 4 seconds). To make the protection more reactive, decrease the MOP integration time.
	Refrigerant charge excessive for the system or extreme transitory conditions at start-up (for cabinets only).	Apply a "soft start" technique, activating the utilities one at a time or in small groups. If this is not possible, decrease the values of the MOP thresholds on all the utilities.

PROBLEM	CAUSE	SOLUTION
In the start-up phase the low pressure protection is activated (only for self-contained units)	The "Valve opening at start-up" parameter is set too low	Check the calculation in reference to the ratio between the rated cooling capacity of the evaporator and the capacity of the valve; if necessary lower the value.
	The driver in RS485 network does not start control and the valve remains closed	Check the serial connection. Check that the pCO application connected to the driver (where featured) correctly manages the driver start signal. Check that the driver is NOT in stand-alone mode.
	The driver in stand-alone configuration does not start control and the valve remains closed	Check the connection of the digital input. Check that when the control signal is sent that the input is closed correctly. Check that the driver is in stand-alone mode.
	LOP protection disabled	Set a LOP integration time greater than 0 s.
	LOP protection ineffective	Make sure that the LOP protection threshold is at the required saturated evaporation temperature (between the rated evaporation temperature of the unit and the corresponding temperature at the calibration of the low pressure switch) and decrease the value of the LOP integration time.
	Solenoid blocked	Check that the solenoid opens correctly, check the electrical connections.
	Insufficient refrigerant	Check that there are no bubbles in the sight glass upstream of the expansion valve. Check that the subcooling is suitable (greater than 5 °C); otherwise charge the circuit.
	The valve is connected incorrectly (rotates in reverse) and is open	Check the movement of the valve by placing it in manual control and closing or opening it completely. One complete opening must bring a decrease in the superheat and vice-versa. If the movement is reversed, check the electrical connections.
	Stator broken or connected incorrectly	Disconnect the stator from the valve and the cable and measure the resistance of the windings using an ordinary tester. The resistance of both should be around 40 ohms. Otherwise replace the stator.
	Valve stuck closed	Use manual control after start-up to completely open the valve. If the superheat remains high, check the electrical connections and/or replace the valve.
The unit switches off due to low pressure during control (only for self-contained units)	LOP protection disabled	Set a LOP integration time greater than 0 s.
	LOP protection ineffective	Make sure that the LOP protection threshold is at the required saturated evaporation temperature (between the rated evaporation temperature of the unit and the corresponding temperature at the calibration of the low pressure switch) and decrease the value of the LOP integration time.
	Solenoid blocked	Check that the solenoid opens correctly, check the electrical connections and the operation of the control relay.
	Insufficient refrigerant	Check that there are no bubbles of air in the liquid indicator upstream of the expansion valve. Check that the subcooling is suitable (greater than 5 °C); otherwise charge the circuit.
	The valve is significantly undersized	Replace the valve with a larger equivalent.
	Stator broken or connected incorrectly	Disconnect the stator from the valve and the cable and measure the resistance of the windings using an ordinary tester. The resistance of both should be around 40 ohms. Otherwise replace the stator.
	Valve stuck closed	Use manual control after start-up to completely open the valve. If the superheat remains high, replace the valve body.
The cabinet does not reach the set temperature, despite the value being opened to the maximum (for multiplexed cabinets only)	Solenoid blocked	Check that the solenoid opens correctly, check the electrical connections and the operation of the relay.
	Insufficient refrigerant	Check that there are no bubbles of air in the liquid indicator upstream of the expansion valve. Check that the subcooling is suitable (greater than 5 °C); otherwise charge the circuit.
	The valve is significantly undersized	Replace the valve with a larger equivalent.
	Stator broken or connected incorrectly	Disconnect the stator from the valve and the cable and measure the resistance of the windings using an ordinary tester. The resistance of both should be around 40 Ω. Otherwise replace the stator.
	Valve stuck closed	Use manual control after start-up to completely open the valve. If the superheat remains high, replace the valve body.
The cabinet does not reach the set temperature, and the position of the valve is always 0 (for multiplexed cabinets only)	The driver in RS485 network does not start control and the valve remains closed	Check the network connections. Check that the pCO application connected to the driver (where featured) correctly manages the driver start signal. Check that the driver is NOT in stand-alone mode.
	The driver in stand-alone configuration does not start control and the valve remains closed	Check the connection of the digital input. Check that when the control signal is sent that the input is closed correctly. Check that the driver is in stand-alone mode.

Troubleshooting Flowchart - Gearmotor



Flowchart 2.

GEARMOTOR SYSTEM

WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

Gearmotor Check

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

WARNING:

The resistance readings on the winding will be between 5 to 25 ohms. A meter capable of these low readings must be used. The start relay cover must be removed.

If there is no continuity on the start or run winding test, replace the gearmotor. If there is continuity on the grounded motor test, replace the gearmotor.

Gearmotor Start Relay

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Check between “2” and “4” on relay (with relay unplugged). If there is continuity replace the relay, as the relay contacts should be open.
2. Check between “3” and “4” on relay, if no continuity replace the relay.

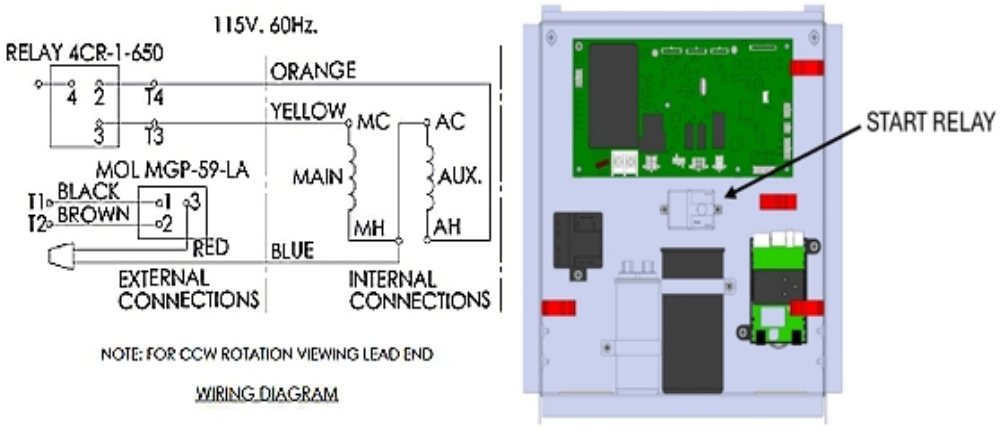


Figure 23. Gearmotor Assembly

Replacing Gearmotor Assembly

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Disconnect the transmission cable from the electrical box.
2. Remove the 4 hex head bolts securing the evaporator to the top of the transmission.
3. Remove the 4 bolt's holding the transmission and bracket to frame base, while supporting the weight of the evaporator, remove the transmission from the unit.
4. When replacing the transmission, it may be necessary to rotate the auger back and forth to align the motor shaft and auger.

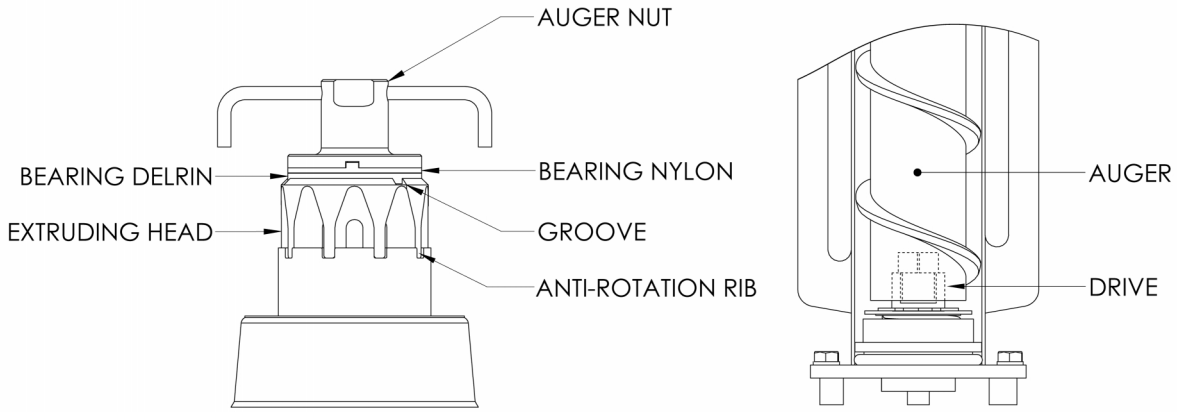


Figure 24. Auger and Extruding Head Removal

Installation and Shaft Seal Replacement

1. Place shaft seal locater seat and shaft seal mount over gearmotor output shaft and push down until shaft seal seat and shaft seal mount rest flush on top of gearmotor.

2. Place rubber coated ceramic seal (important: ceramic face up) over output shaft and push down until seal nest in recess of shaft seal mount. (lubricate rubber on ceramic seal with rubber lubricant).

3. Place shaft seal with carbon face down (spring up) over output shaft and push (gently) down- ward until seal rests on carbon face of the out- put shaft seal.

4. Place flat washer over output shaft and let rest on the output shaft seal. Push down on the washer compressing the spring on the output shaft seal. While holding the seals (down) in place slide the E–ring into the groove on the output shaft

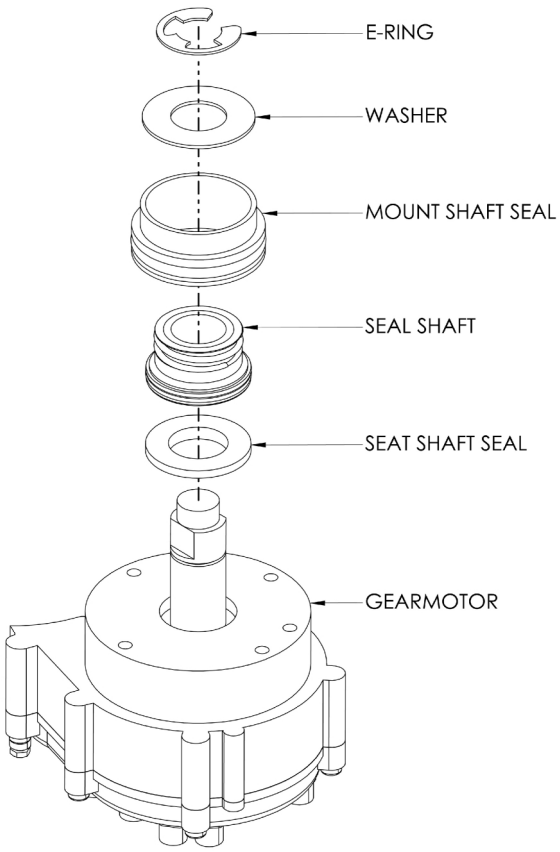


Figure 25. Gearmotor Shaft Seal

Upper Nut and Bearing Assembly

The upper white bearing located on top of the auger is used to absorb the force between the auger and extruding head.

NOTE: The bearings are 3⁄32 thick. When they wear below 1⁄16 they should be replaced. Bearings to be inspected for wear during quarterly maintenance.

Replace Upper Auger Bearing

⚠ WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Remove top panels.
2. Remove Dispense Tray Cover.
3. Use an open end wrench on auger nut connected to bearing and turn counterclockwise to remove assembly.
4. Remove worn bearings. Replace with new bearings and then reinstall assembly.

   NOTE: If auger turns with nut, remove auger from icemaker evaporator and disassemble on bench.

Electrical Checkout

⚠ WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

Remove the compressor unit front panel. Check for obvious damage and loose wires.
Disconnect the fan motor leads. Since capacitors store energy, they must be discharged before servicing. A capacitor discharge pen or similar tool MUST be used to avoid arcing or sparking of the capacitor.

COMPRESSOR SYSTEM & COMPONENTS

WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

Compressor Check

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

The resistance readings on the windings shall be per the chart below:

1. Check between “C” and “R.” Replace the compressor if there is no continuity as the run windings are open.

2. Check between “C” and “S.” Replace the compressor if there is no continuity as the start windings are open.

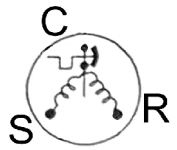


Figure 26. Compressor Check

3. Check between “C” and “R” or “S” and the shell of the compressor. If there is continuity, replace the compressor as the motor is grounded.

4. Check between screw terminal on the overload and “C” on the compressor. Check and repair the lead or connections if there is no continuity.

RESISTANCE VALUES WCC700-E* Compressor Model RFT37C1U-CFA**		
“R” and “S” (OHMS)	“S” and “C” (OHMS)	“R” and “C” (OHMS)
2.5 +/-.2	2.1 +/- .2	0.6 +/- .2

Capacitor Check

WARNING:

Disconnect power to the unit before servicing. Follow all lock out/tag out procedures established by the user. Verify all power is off to the unit before performing any work. Failure to comply could result in serious injury, death or damage to the equipment.

1. Check or replace start capacitor, disconnect bleed resistor before checking for shorted capacitor.

2. Check or replace run capacitor (if supplied) check for shorted capacitor or either terminal grounded to case.

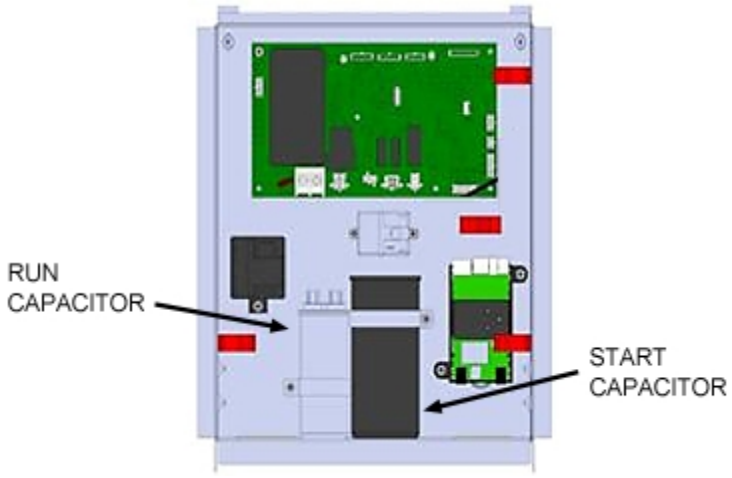


Figure 27. Capacitor Location

Safety Controls

Your icemaker unit has several safety and control devices incorporated into its design.

WARNING:

None of the devices described below should ever be "bypassed" to allow the unit to function.
Failure to comply with this warning could result in serious injury, death or damage to the equipment.

The safety and control system shut–off devices are:

1. Low water shut off reed switch located in icemaker float assembly. (Automatic reset type.)
2. Gearmotor thermal overload, manual reset type (red button on motor).
3. Compressor thermal overload, automatic reset type.
4. A detachable power cord.

GUIDE TO GOOD ICE

CUSTOMER COMMENTS		CHECK ICEMAKER LOCATION CONDITIONS FIRST	CHECK ICE MAKER
"It runs but the ice is too soft." "The icemaker is not producing enough ice." "The ice is too wet."		Proper air flow for condensing system. Location too close to High Temperature units such as coffee urns, deep fryers, grills, etc. Supply water conditions Water too warm (above 90°F). Water artificially softened above 262 ppm sodium. Normal water supply too high in total dissolved solids (above 500 PPM).	Use gauges for checking suction and head pressures. See manual for correct reading and conditions. Check frost line. Check water level for proper adjustment and restrictions. See Manual. Check evaporator assembly for worn parts, bearings, scored evaporator and auger, bad expansion valve. etc.
"It makes too much noise." (With this comment the ice is usually extremely hard and larger than normal.)	Over Compression	Check to see if noise objection is normal fan and air flow noise. Supply water conditions. Water too cold (below 50°F). (Possibly running from pre-cooler.) Obstructions partially blocking ice exit from top of evaporator. Check fan and fan shroud.	Check for loose parts and screws rattling. Check evaporator assembly for worn parts, bearings, scored evaporator and auger, bad expansion valve, etc.

CORNELIUS ICE/BEVERAGE COMBO SOFT ICE DISPENSING TIPS

This is a generic checklist to help troubleshoot possible 'soft ice' dispensing/beverage quality problems for all Cornelius Above Counter Ice/Beverage dispensers. It is strongly recommended that this checklist is followed to avoid any dispensing or beverage quality issues.

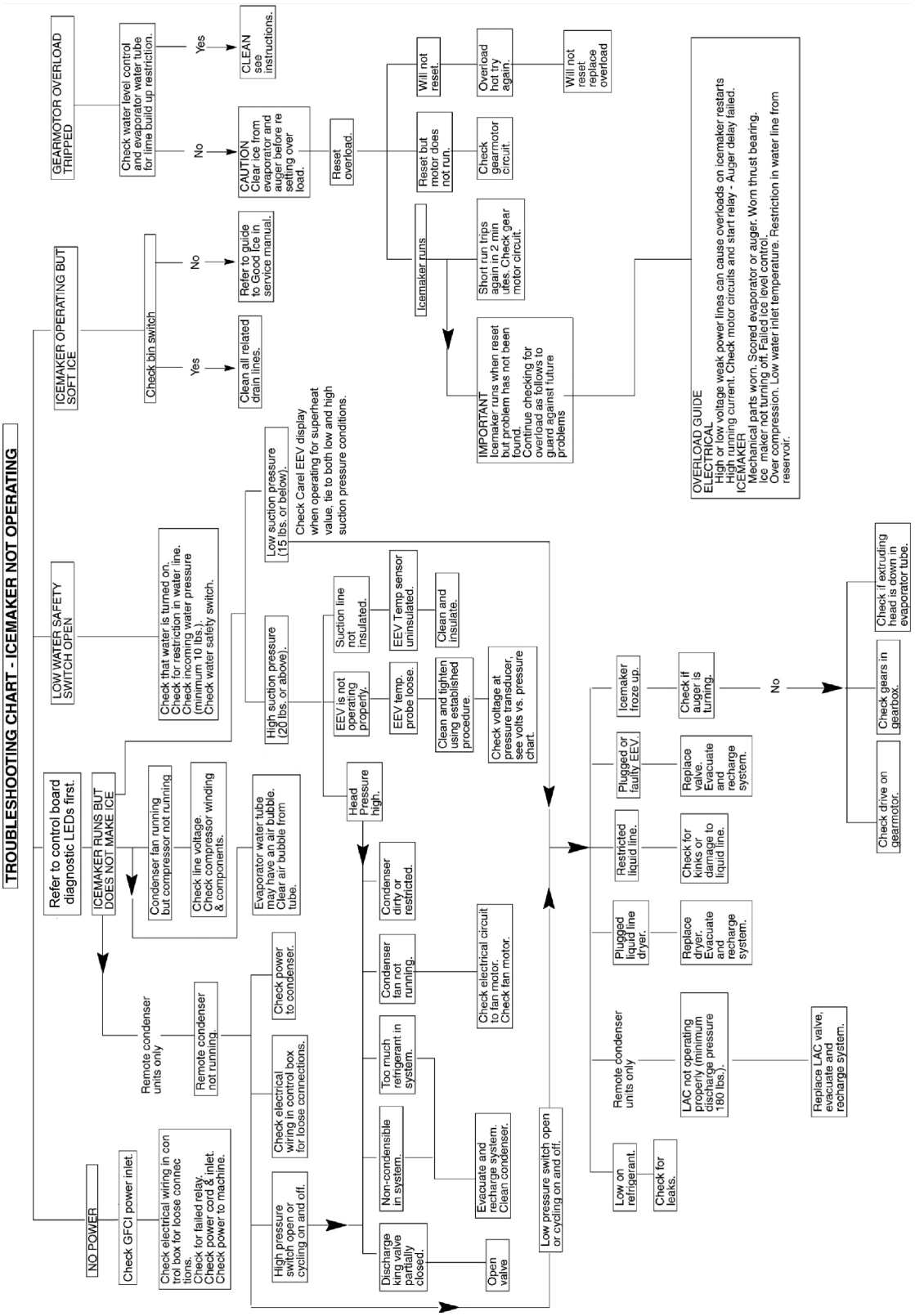
Soft ice is defined as any ice that has a lower ice to water ratio. Some typical characteristics are small, very wet ice pieces, easily chewable and cloudy in appearance.

This would include such ice type names as nugget, pellet, Chunklet etc. Cornelius recommends the use of Cornelius Chunklet icemaker s for optimal dispensing and beverage performance from your Cornelius Ice/ Beverage Combo dispenser.

'X' indicates dispenser is AFFECTED by Issue and Solution Blank box indicates dispenser is NOT AFFECTED by Issue or Solution												
Question or Issue	**ED/DF 150**	**ED/DF 175**	**ED/DF 200**	**ED/DF 250**	**ED/DF 300**	**IDC 175**	**IDC 215**	**IDC 255**	**IDC 300**	**NGF 255**	**Flavor Fusion**	**Solution**
Is the icemaker sized correctly for the dispenser size?	X	X	X	X	X	X	X	X	X	X	X	If no, failure to meet this criteria can result in icemaker s that short cycle which will increase the amount of wet ice being introduced into the system and greatly affect ice dispense. Dispenser hopper capacity and amount of daily ice usage are key factors that need to be taken in account when sizing an icemaker to a dispenser. Under sizing an icemaker can cause ice shortage and over sizing can cause short cycling as mentioned above. Contact Cornelius Sales for icemaker to dispenser sizing details.
Does the icemaker produce 'flaked' ice?	X	X	X	X	X	X	X	X	X	X	X	Cornelius does NOT recommend the use of 'flaked' ice for dispensing and such icemakers should not be used
Is the correct icemaker adapter kit installed?	X	X	X	X	X	X	X	X	X	X	X	If no, the approved adapter kit must be installed with it's approved icemaker. Failure to do so may result in undesirable hopper fill and ice dispensing issues. Contact Cornelius Sales for approved adapter/icemaker combinations
Is the icemaker positioned properly on the adapter kit?	X	X	X	X	X	X	X	X	X	X	X	Most adapter kits are approved for front facing icemakers ONLY unless otherwise specified in the adapter kit instructions OR if kit was designed for alternate icemaker positions. Contact Cornelius Sales for adapter/icemaker application questions
Is the hopper ice slide installed?			X	X			X	X		X	X	If no, install the appropriate ice slide for that unit. ED/DF 200 - kit 629088508 (includes diverter) ED/DF 250 - kit 629088507 (includes diverter) IDC / NGF / FF - ice slide is included in the appropriate adapter kit. Contact Cornelius Sales for adapter kit information.
Are the soft ice agitator's installed?	X	X			X							If no, install agitator(s). Please note there is a right and left hand agitator for the ED/DF300's ED/DF 150,175 - kit 629088514 (includes diverter) ED/DF 300 - kit 629088644 (includes diverter) IDC/NGF/CF/FP - kit 629097086

Question or Issue	ED/DF 150	ED/DF 175	ED/DF 200	ED/DF 250	ED/DF 300	IDC 175	IDC 215	IDC 255	IDC 300	NGF 255	Flavor Fusion	Solution
Is the ice diverter kit installed?	X	X	X	X	X		X	X		X	X	If no, install the appropriate ice diverter kit. Diverter is included in kit part numbers listed above or call Cornelius Sales for diverter kit ordering information
Is the ice restrictor open completely?	X	X	X	X	X	X	X	X	X	X	X	If no, open completely the ice restrictor. Some factors may include customer ice flow requirements and how well the ice dispenses (Be sure restrictor is installed properly!). This should be evaluated on a case by case basis.
Is the dispenser agitator off-cycle timer changed to 3 hours OFF, 2 seconds ON?	X	X	X	X	X	X	X	X	X	X	X	If no, adjust settings. (Don't forget to adjust BOTH timer boards on the 300 size units). Consult Dispenser Service Manual or call Technical Support for instructions on how to adjust settings.
Is there an icemaker bin thermostat installed?	X	X	X	X	X	X	X	X	X	X	X	If no, install an appropriate bin thermostat per the icemaker 's manufacturing recommendations. Contact the icemaker manufacturer for bin thermostat ordering information.
Is the icemaker's bin stat installed at least 4" below hopper level	X	X	X	X	X	X	X	X	X	X	X	If no, adjust bin stat location (Depending on ice quality or wetness, it may be necessary to adjust deeper into hopper. Be sure bin stat does NOT interfere with agitator rotation Order ONE of kit 1611110006843 if you are using a Cornelius WCC700 icemaker . Order TWO of kit 1611110006843 if you are using a Cornelius WCC1400 icemaker .
Is dispenser and/or icemaker water supply attached to a water softener or phosphate feeder?	X	X	X	X	X	X	X	X	X	X	X	If yes, Cornelius does NOT recommend the use of a water softener/phosphate feeders and must be completely avoided
Is a water filter system installed on the icemaker?	X	X	X	X	X	X	X	X	X	X	X	Poor water quality will greatly affect icemaker / dispenser performance. The selection of the correct filter system must be handled on an individual basis as the water quality and impurities vary greatly in different parts of the country as well as in different cities.
Is the dispense count less than 30 per day?	X	X	X	X		X	X	X		X	X	Install extended bin stat kit 629096848 for WCC700 or 629096849 for WCC 500. Install 2 pcs extended bin stat kit 629096848 for WCC1400 and WCC2000.

TROUBLESHOOTING - Icemaker Not Operating



Flowchart 3.

ELECTRONIC CONTROLLER OVERVIEW AND TROUBLESHOOTING

The ice making equipment is controlled via an electronic printed circuit board (Part Number 80013-PCBA-01). This control board is responsible for all functions of the equipment's operation. Figure X shows the layout of the control board. The following sections define each LED indicator function, each switch function, and each connector's function.
Note: Functions utilized are model specific.

Precautions

⚠ WARNING:
Risk of electric shock. Care should be taken not to touch live terminals. Control board access should only be performed by qualified personnel.

⚠ CAUTION:
Control board should be considered fragile if/when replacing. Care should be taken not to overstress the control board.

⚠ CAUTION:
The control board utilizes electrostatic sensitive circuits. It is important to touch the metal chassis of the ice maker before touching the control board if required. Care should be taken not to touch any of the electronic circuitry on the board.

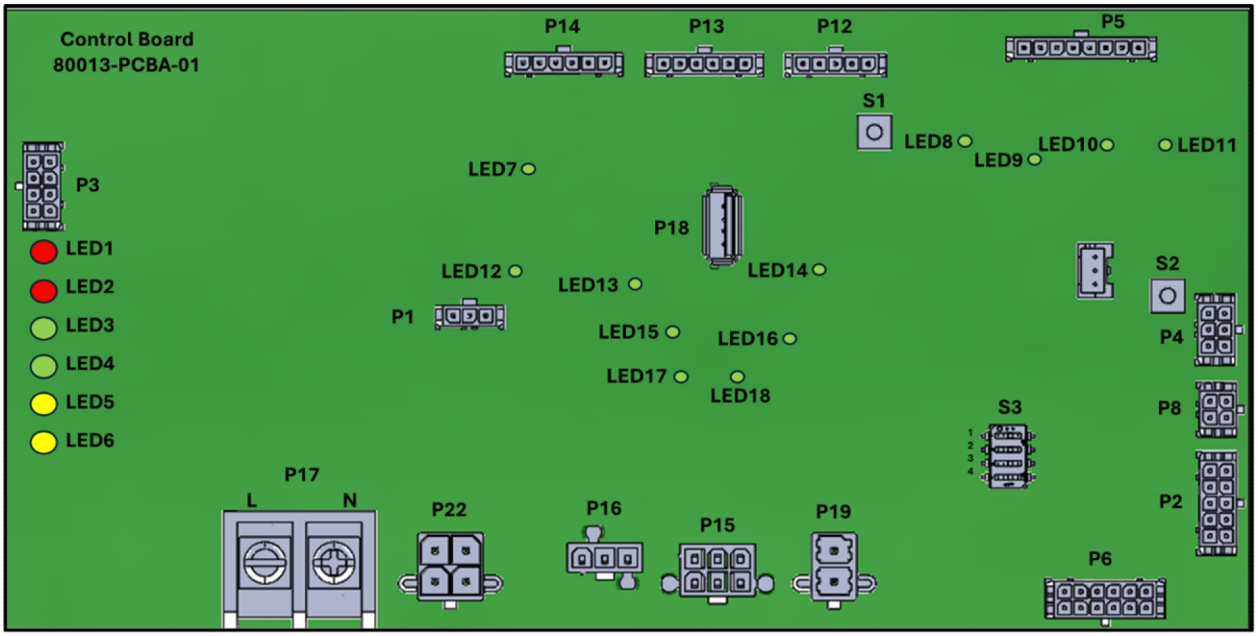


Figure 28. Main Control PC Board

LED Indicators

LED Indicator	Color	Description
LED1	Red	Status LED 1 (See details below)
LED2	Red	Status LED 2 (See details below)
LED3	Green	Status LED 3 (See details below)
LED4	Green	Status LED 4 (See details below)
LED5	Yellow	Status LED 5 (See details below)
LED6	Yellow	Status LED 6 (See details below)
LED7	Green	Illuminated if Power Supply 1 is Functional
LED8	Green	Illuminated when Solenoid 1 Power Control is enabled
LED9	Green	Illuminated when Solenoid 2 Power Control is enabled
LED10	Green	Illuminated when Solenoid 3 Power Control is enabled
LED11	Green	Illuminated when Solenoid 4 Power Control is enabled
LED12	Green	Illuminated when Compressor Power Control is enabled
LED13	Green	Illuminated if Power Supply 2 is Functional
LED14	Green	Computer Operating Properly (See details below)
LED15	Green	Illuminated when Condenser Fan Power Control is enabled
LED16	Green	Illuminated when Ice Auger Power Control is enabled
LED17	Green	Illuminated when Ice Dispensing Solenoid Power Control is enabled
LED18	Green	Illuminated when Ice Bin Agitator Motor Power Control is enabled

Status LED Definition

Status LED	Definition
LED1	This LED indicates major errors in the system. It is shared with the front panel indicator red LED. The LED definition is as follows: Off: No errors ON Solid: Built in Test Error During Boot – See LED5 for additional diagnostics. 1 Blink: Expansion Communication Bus 0 Error 2 Blinks: Expansion Communication Bus 1 Error 3 Blinks: Pressure Sensor Out of Range 4 Blinks: Temperature Sensor Out of Range 5 Blinks: Auger No Current Detected Error 6 Blinks: Ice Dispensing Bin Full Error NOTE: Blink count will occur rapidly followed by a 2 second pause before repeating. NOTE: If there are multiple errors detected the order of precedence shall be determined by the following order: Solid on is highest priority, then highest number of blinks down to lowest number of blinks.
LED2	Unused – Set to OFF
LED3	This LED indicates USB interaction in the system. It should be off in normal operation. Service information only: Upon USB drive detection, this LED will turn on and remain on while USB drive is in use. Once all files are read and written it Blinks at a rate of 0.5 seconds on and 0.5 seconds off indicating the process is complete and indicating the drive can be pulled out. NOTE: The control will automatically reboot during this process if a firmware update is required.
LED4	This LED indicates the ice making state and the definition is as follows: Off if the unit is in standby (no errors and no ice making happening) On if the unit is making Ice Blinks at a rate of 0.5 seconds on, 0.5 seconds off if the unit is waiting on compressor minimum off timer. Blinks at a rate of 0.1 seconds on, 0.1 seconds off if the unit is in Auger Anti-Ice Timeout at end of Ice making.
LED5	This LED indicates if the cleaning timer has expired. It is shared with the front panel indicator yellow LED.

LED6	This LED indicates minor (potentially self recoverable) errors in the system as well as the specific Built in Test Error that occurred during boot. The LED definition is as follows if a Built in Test error has occurred (LED1 is solid on): ON Solid: Configuration Parameters are missing. 1 Blink: Expansion Communication Bus 0 Error 2 Blinks: Expansion Communication Bus 1 Error 3 Blinks: DC Solenoid Startup Current Error 4 Blinks: Ice Auger Startup Current Error 5 Blinks: Pressure Sensor is out of range 6 Blinks: Temperature Sensor is out of range 7 Blinks: On board temperature is out of range 8 Blinks: Local Microcontroller Memory Error The LED definition is as follows if the LED1 is NOT on. ON Solid: No Water Present 1 Blink: Board Over Temperature 2 Blinks: Potential Low Water Pressure Detected 3 Blinks: Ice Dispense Timeout Detected 4 Blinks: Water Dispense Timeout Detected 5 Blinks: DC Solenoid Operation Over Current Detected 6 Blinks: Auger Operation Over Current Detected 7 Blinks: Refrigeration Error Detected NOTE: Blink count will occur rapidly followed by a 2 second pause before repeating. NOTE: If there are multiple errors detected the order of precedence shall be determined by the following order: Solid on is highest priority, then highest number of blinks down to lowest number of blinks.

Computer Operating Properly (COP) LED Definition

LED14 will blink at an interval of 1 second on and 1 second off. This indicates that the local microcontroller is operating properly. If the LED is not behaving in this manner, service personnel should be notified.

Switch Definitions:

S1: Cleaning Counter Reset Switch
This switch is used to reset the cleaning reminder counter. It is utilized as part of the cleaning procedure covered above.

S2: Controller Reset Switch
This switch will reset the controller and initiate a reboot upon release. It should be used only by trained personnel.

S3: Configuration Switch
There are 4 individual, settable switches contained within this switch. They have no bearing on the ice maker's operation.

Connector Definitions:

This section provides a general description of each connector's function. Refer to the wiring diagram for utilized connections as each ice maker is different.

Connector Designator	Generic Function
P1	Compressor Power Cutoff Connection
P2	Temperature Probe(s) Connections
P3	Front Panel Indicator LED Connections
P4	Pressure Sensor(s) Connections
P5	DC Solenoid Power Connections
P6	Control Switch(es) Connections
P8	Water Level Conductivity Probe(s) Connections
P12	Discrete Sensor(s) Connections
P13	Additional Module(s) Slot 1 Connection
P14	Additional Module(s) Slot 0 Connection
P15	Ice Dispense Solenoid and Ice Bin Agitator Motor Power Connections
P16	Condenser Fan Power Connection
P17	Control Input Power Connection
P18	USB Type "A" In Field Support Connection
P19	Ice Auger Motor Power Connection
P22	Compressor Motor Power Connection

Major and Minor Errors

A major error, as indicated by the status LEDs, will cause the unit to be non-functional. The error is only cleared with a power cycle of the unit.

A minor error, as indicated by the status LEDs, will result in loss of the function to which the error pertains, however it will self-recover if the error no longer persists. The self-recovery is different based on the type of soft error.

- No Water Present error will clear instantly when water is detected again.
- Potential Low Water Pressure error will clear when there are less than 3 No Water Present Errors occurring within 1 hour.
- Ice Dispense and Water Dispense (if equipped) Errors will clear when a change in the respective dispense switch is detected.
- The Board Over Temperature, Over Current, and Refrigeration errors will clear after 60 minutes has elapsed and the error is subsequently no longer detected.

Typical Initial Power On and Ice Making Steps

⚠ WARNING:

Risk of electric shock. Care should be taken not to touch live terminals. Control board access should only be performed by qualified personnel.

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

Basic Control Board Troubleshooting for Unit Not Producing Ice

1) Upon power being applied, ensure LED7 and LED13 are on. If not, check input power connections to the controller at P17.
2) Ensure the LED14 (COP) LED is blinking at the specified rate upon power being applied.
3) Ensure LED1 is not on. If LED1 is on check for LED6's error code. If LED1 is blinking with an the error code and check all appropriate cabling and/or sensors.
4) Ensure LED6 is not on. If LED6 is on and solid, check that there is water in the input reservoir.
5) If LED6 is blinking with an error code, check all appropriate cabling and/or sensors.

Contact support for further Troubleshooting.

DECOMMISSIONING

Qualified Service Personnel

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. Servicing shall be performed only as recommended by the manufacturer. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate the system electrically.
3. Before attempting the procedure, ensure that:
    a. mechanical handling equipment is available, if required, for handling refrigerant cylinders;
    b. all personal protective equipment is available and being used correctly;
    c. the recovery process is supervised at all times by a competent person;
    d. recovery equipment and cylinders conform to the appropriate standards.
4. Pump down refrigerant system, if possible.
5. If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
6. Make sure that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with instructions.
8. Do not overfill cylinders (no more than 80 % volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.

Labeling

Equipment shall be labeled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e., special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

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