

Technical Training
CU0415, CU0715, CU0920
Essential Ice



Presentation Topics

- Introduction
- Installation
- Operation
- Cleaning
- Diagnostics
- Service

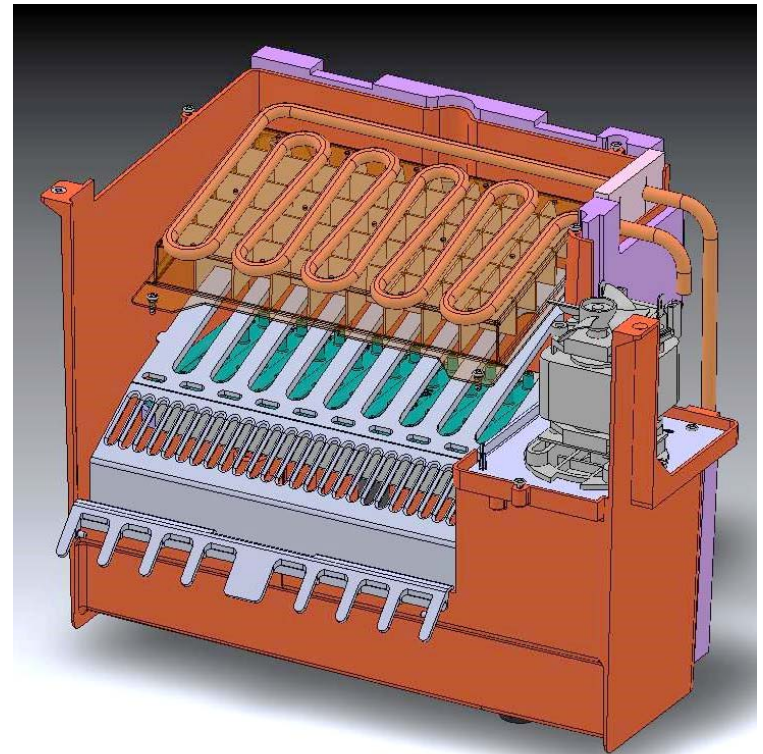


Introduction

- Three basic models
 - Air cooled, 15 inch wide, 58 lb – CU0415
 - Air cooled, 15 inch wide, 80 lb – CU0715
 - Air cooled, 20 inch wide, 100 lb – CU0920
- Three electrical configurations
 - 1 or 115 60 Hz
 - 32 or 208-230 60 Hz
 - 6 or 230 50 Hz
- Warranty – 3 years parts and labor

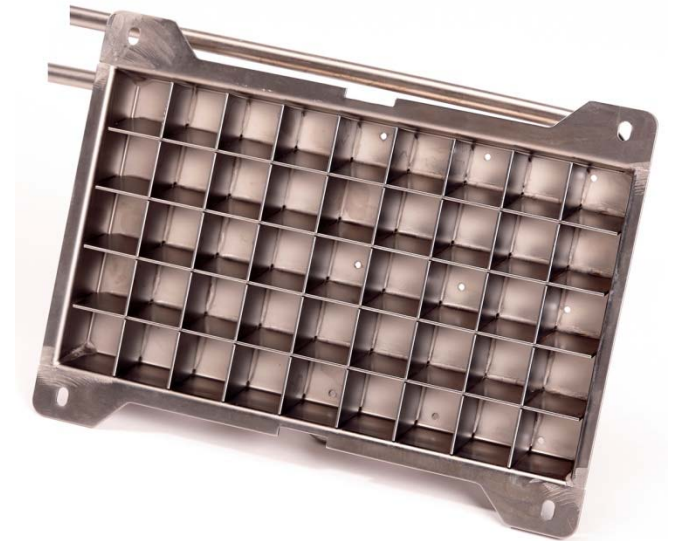
Ice Type

- Medium cube / full dice
- Inverted grid evaporator
- Dedicated spray jet per cube cell
- 45 cubes per cycle
 - Cubes harvest as a unit



Evaporator

- Nickel Plated Copper
- Mounted inverted above spray platform



Refrigeration System

- R-134a
- Cap tube
- Air cooled only
 - Air in the front and out the front
 - Fan pressure control switch
- No access valves
- Common evaporator on all three

Water System

- Batch type – single fill per cycle
 - Inlet water solenoid valve
 - .275 GPM
 - On during harvest
 - Standpipe in reservoir
- Water pump
 - Off during harvest
- Spray platform
- Same parts on all models (non electrical)

Control System

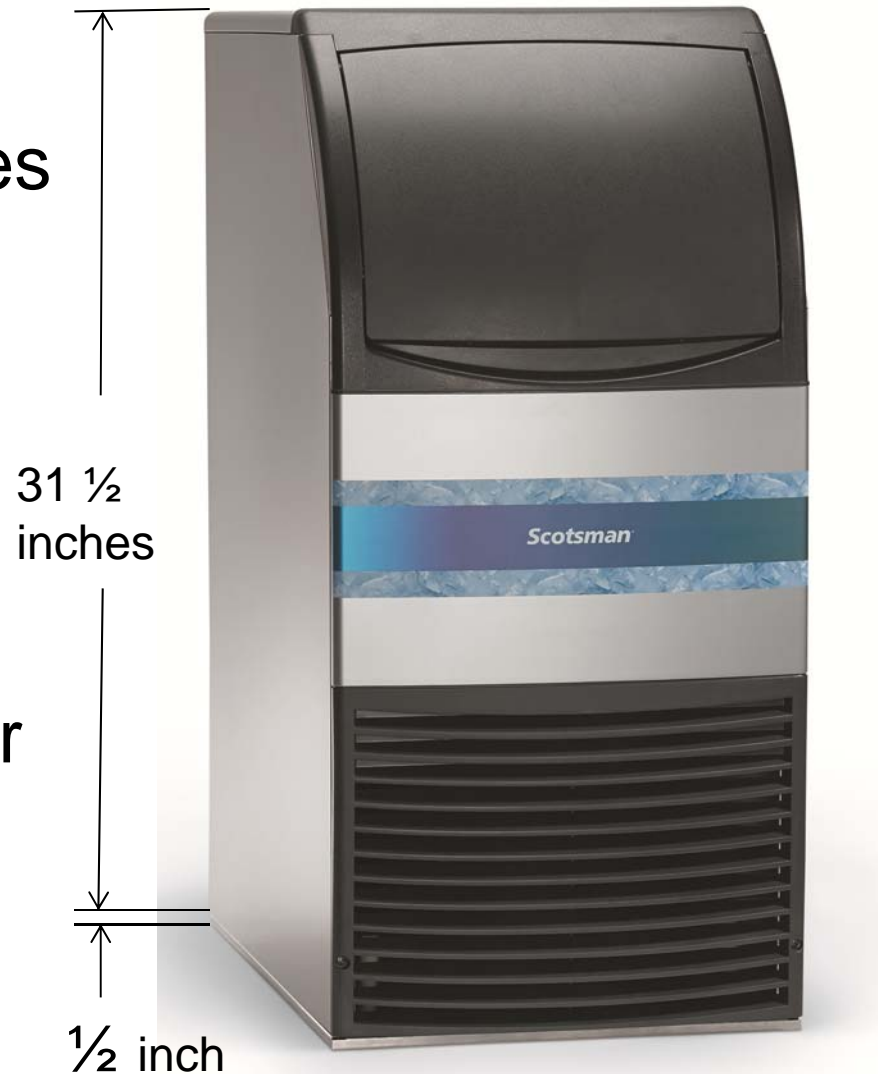
- Temperature initiated, timed cycle
 - Thermistor on suction line
 - For freeze and harvest
 - Controller
 - Bin thermostat
 - Opens on temperature fall
 - Capillary tube in sensing tube in bin
 - Thermistor in pump hose
 - For anti-slush mode

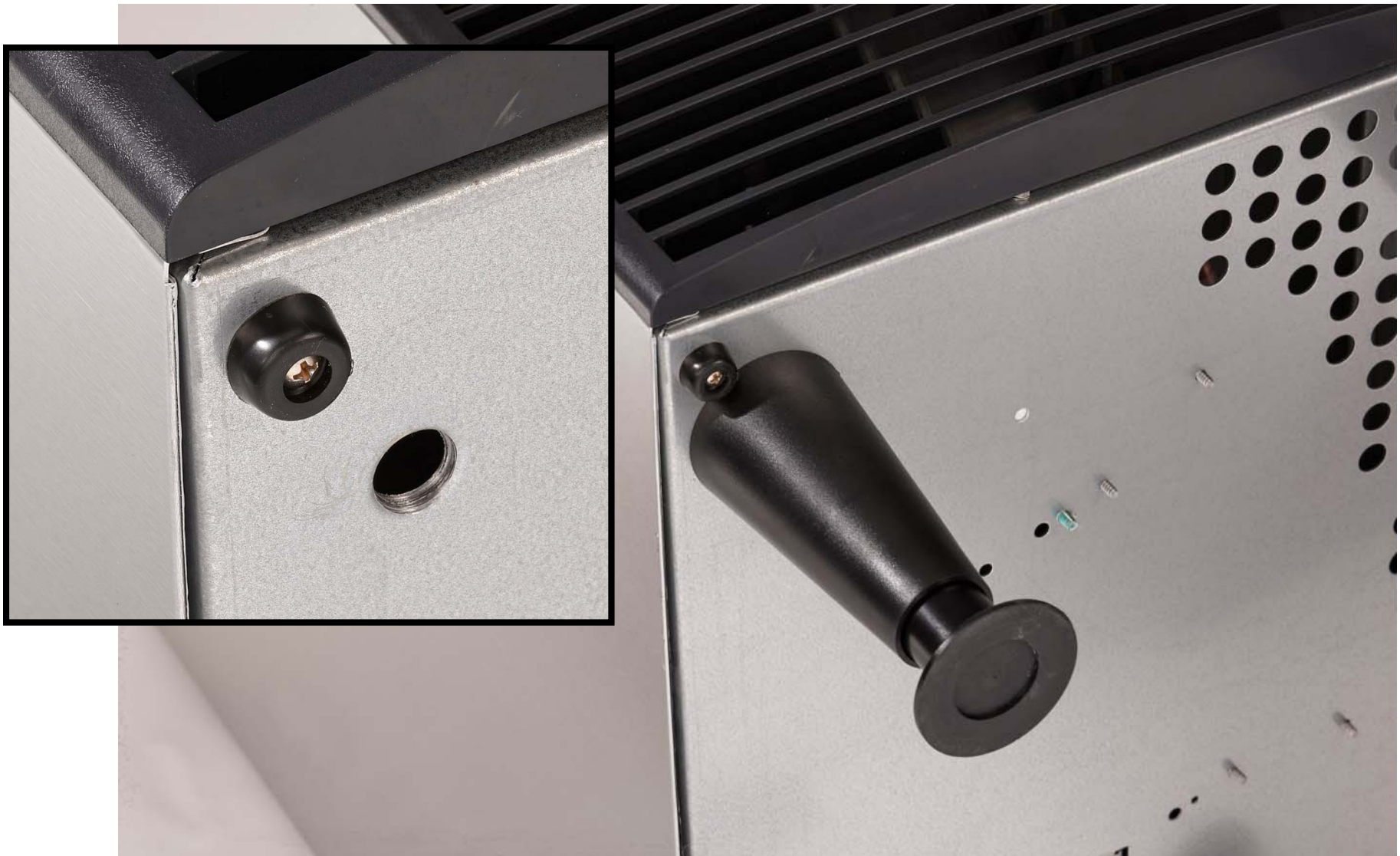
Installation

- Unit supplied with 6 inch legs
 - 8 inch available – 02-4731-02, set of 4
- Can be floor mounted
 - Has bumpers on base to keep from damaging floor
 - Kit available to make sealing to floor easier
 - KUFM15 or KUFM20
 - Can fit under 34” high ADA counter
 - 32” high w/out legs, including space for bumper or floor mounting kits

Floor Mounting Kits

- Kits provide plastic glides and trim strips to attach to base in place of legs
- Fills in the half inch of space at the bottom
- Allow sealing to the floor
- Will fit under 34 inch ADA countertop height





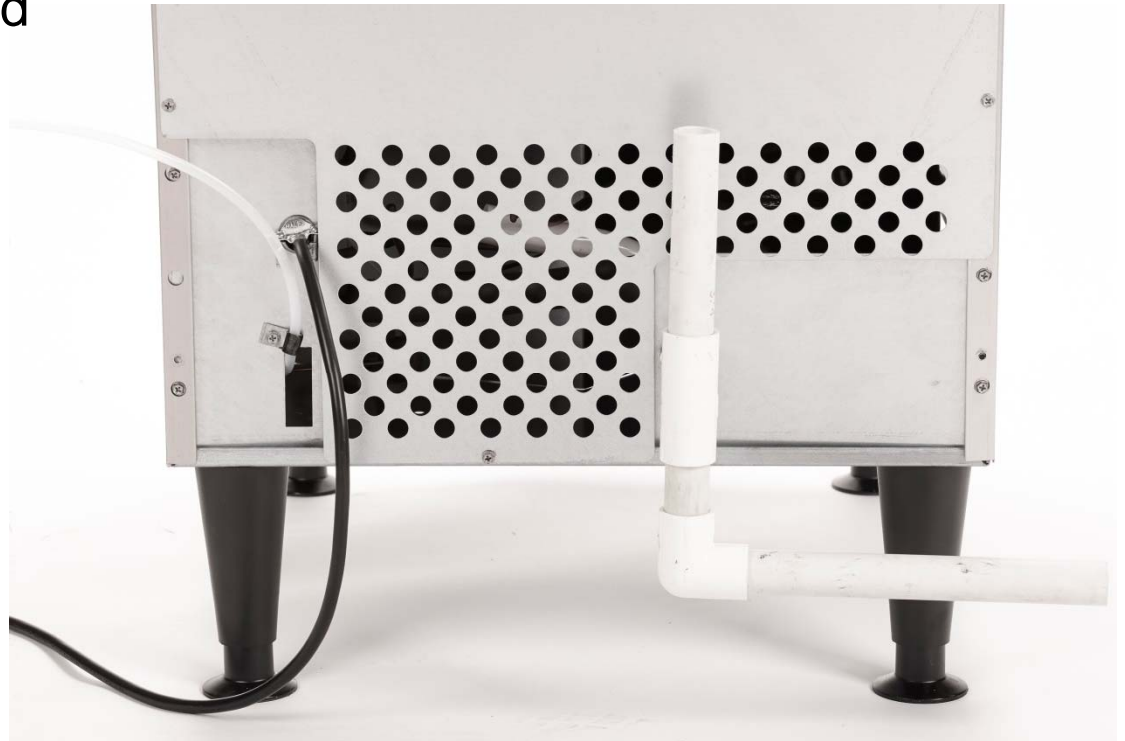
Installation

- Minimum clearances when built in
 - 1/8 inch at sides
 - 1/4 inch at top
 - 4 inch minimum behind machine
 - Will make ice at minimum but performance better with more clearance
- Electrical
 - Supplied with power cord
 - 115/60- NEMA 5-15 plug
 - 208-230/60 - 14136 type cord and plug →
 - 230/50 – cord w/out plug



Installation

- Water and Drain – all models
 - Drain is $\frac{3}{4}$ FPT
 - Must be vented



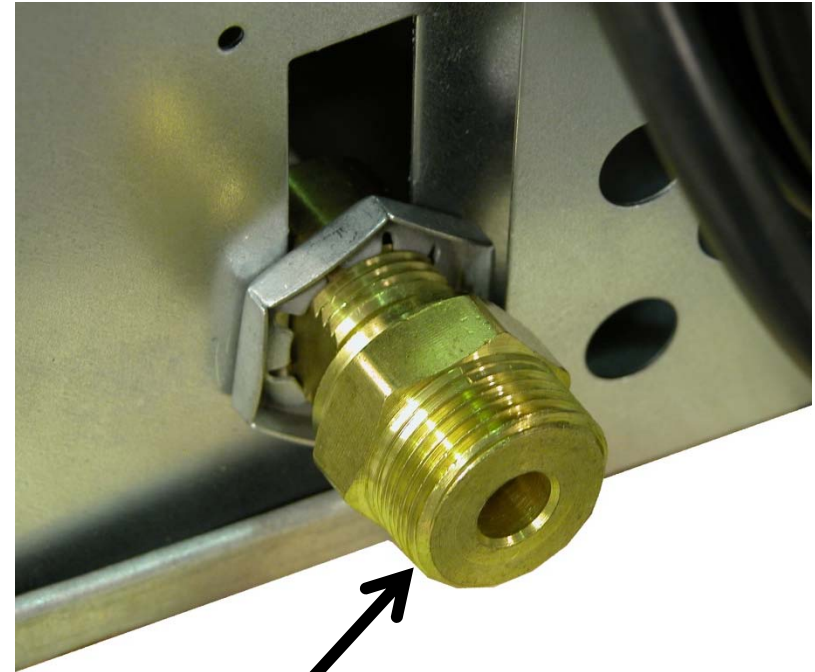
Installation

- Water Connection - 1 1/2/60
 - 1/4 inch OD plastic tubing routed out the back
 - No fittings are supplied



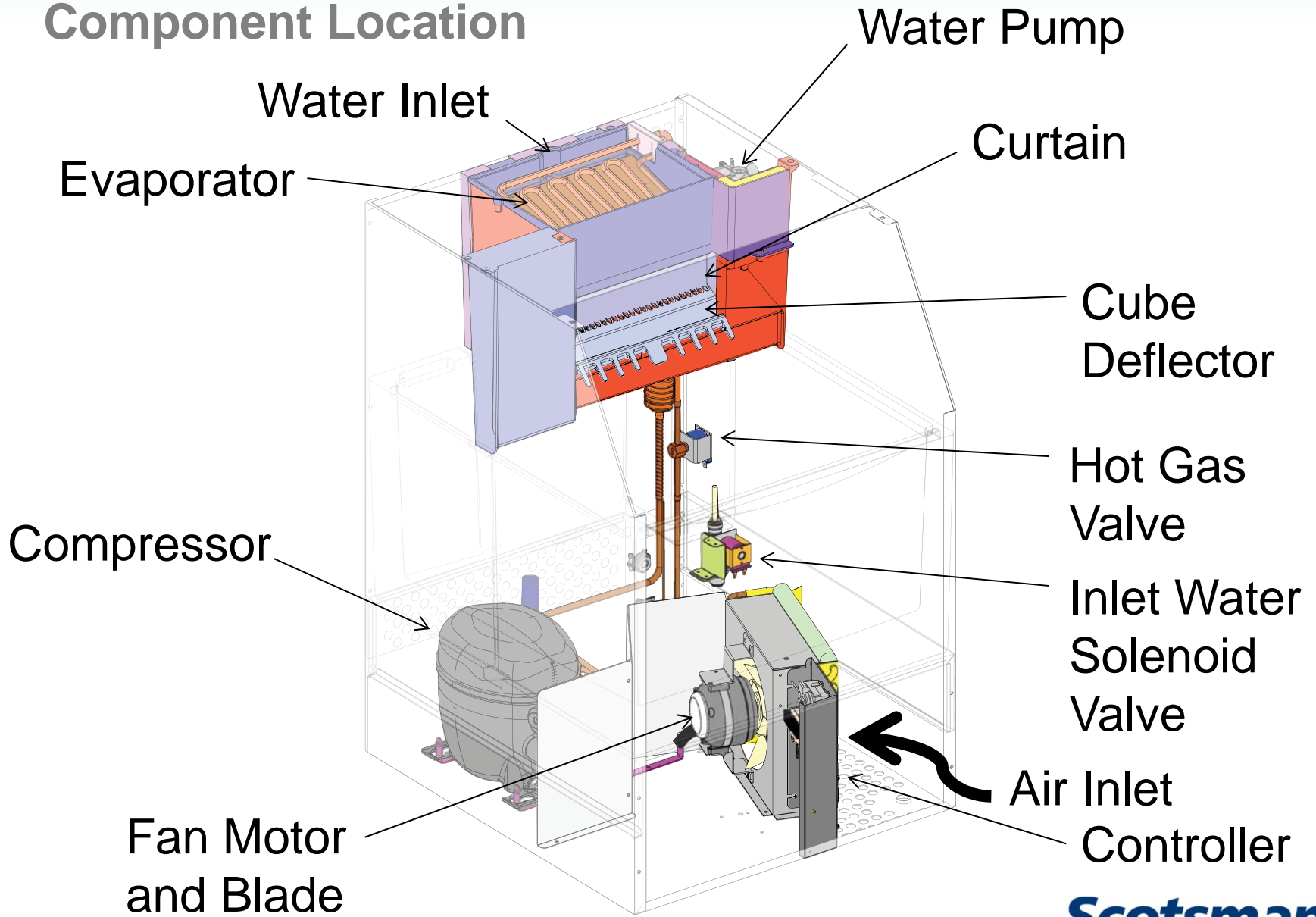
Installation

- Water connection -
208-230/60 or 230/50
 - Includes water supply hose
 - Fitting supplied loose in bin
 - Attaches to 3/8 male flare on back of unit



Fitting

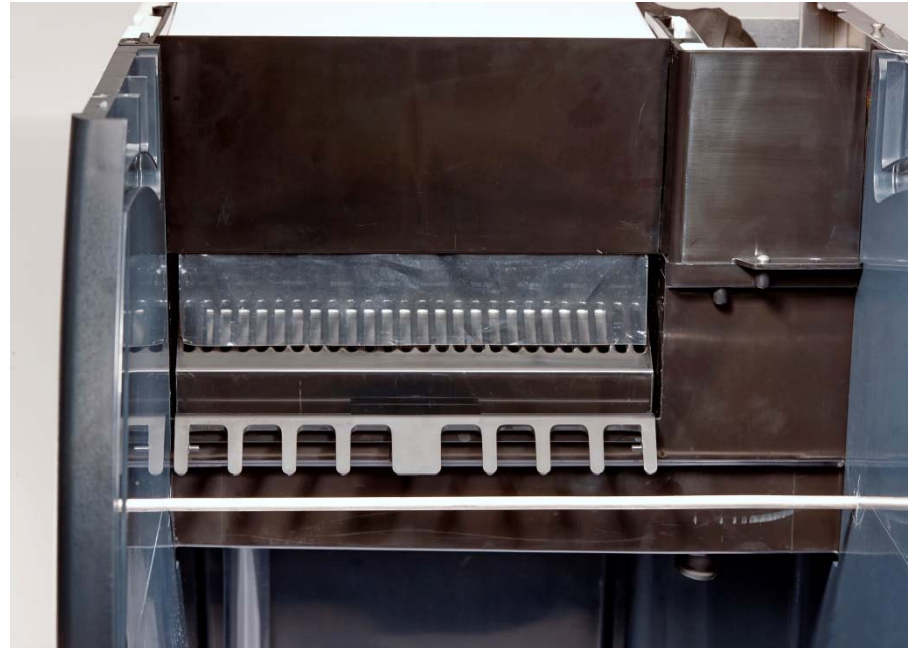
Component Location



Pre-Start Inspection

- Check freezing compartment
- Remove any shipping blocks and other materials
- Check
 - Cube deflector – snapped down?
 - Spray platform – in place?
 - Curtain – hanging free?

Inspect Freezing Compartment



- Move curtain and check spray platform under cube deflector.
 - Jets point straight up.
- Pull curtain down to its normal position.

Initial Start Up

- Turn water supply on
 - MUST be on first
- Remove front panel
- Connect electrical power
- Switch master switch to ON



Start Up

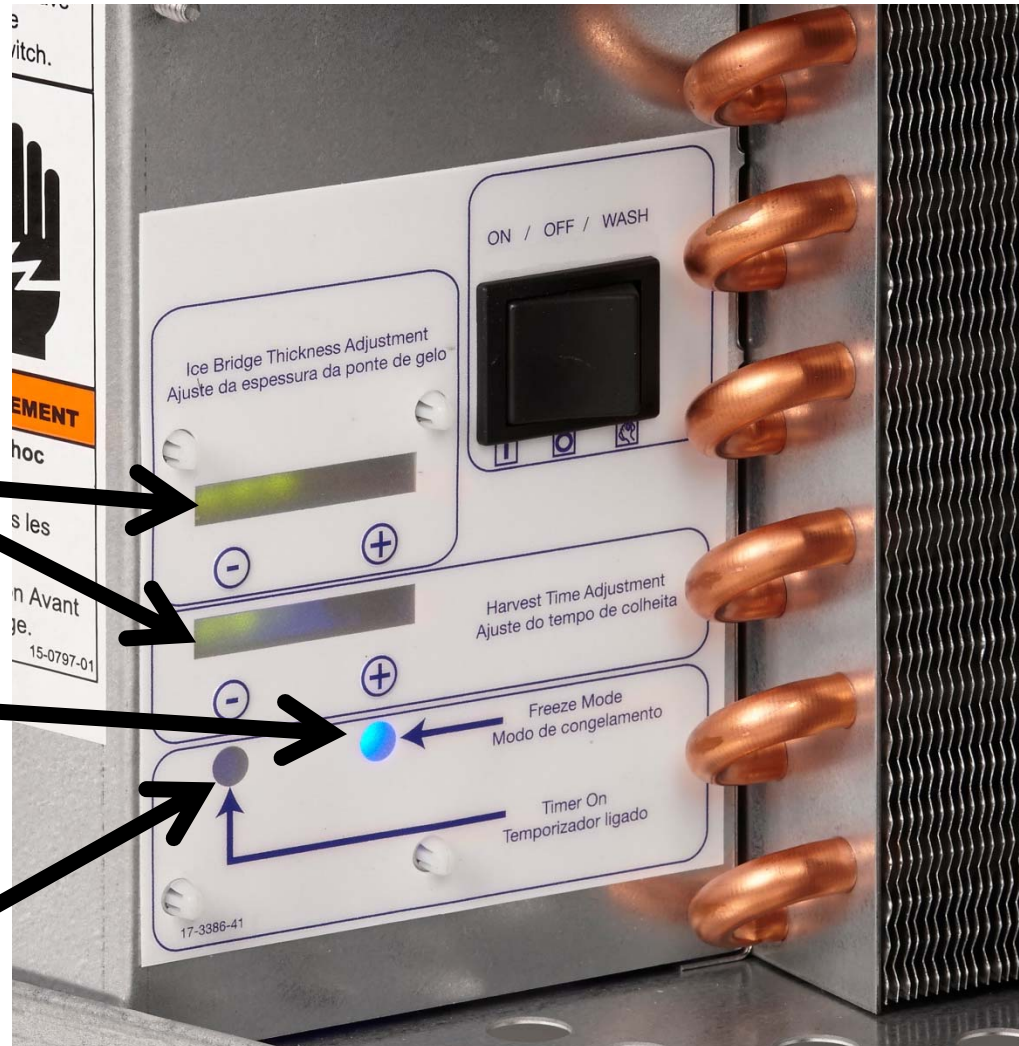
- Bin thermostat **must be closed** to supply power to controller
- Unit will start in Harvest mode
 - Water flows in
 - Compressor on
 - Hot gas valve open
- Two minutes later freeze cycle begins
 - Pump and fan ON
 - Water and hot gas valves OFF

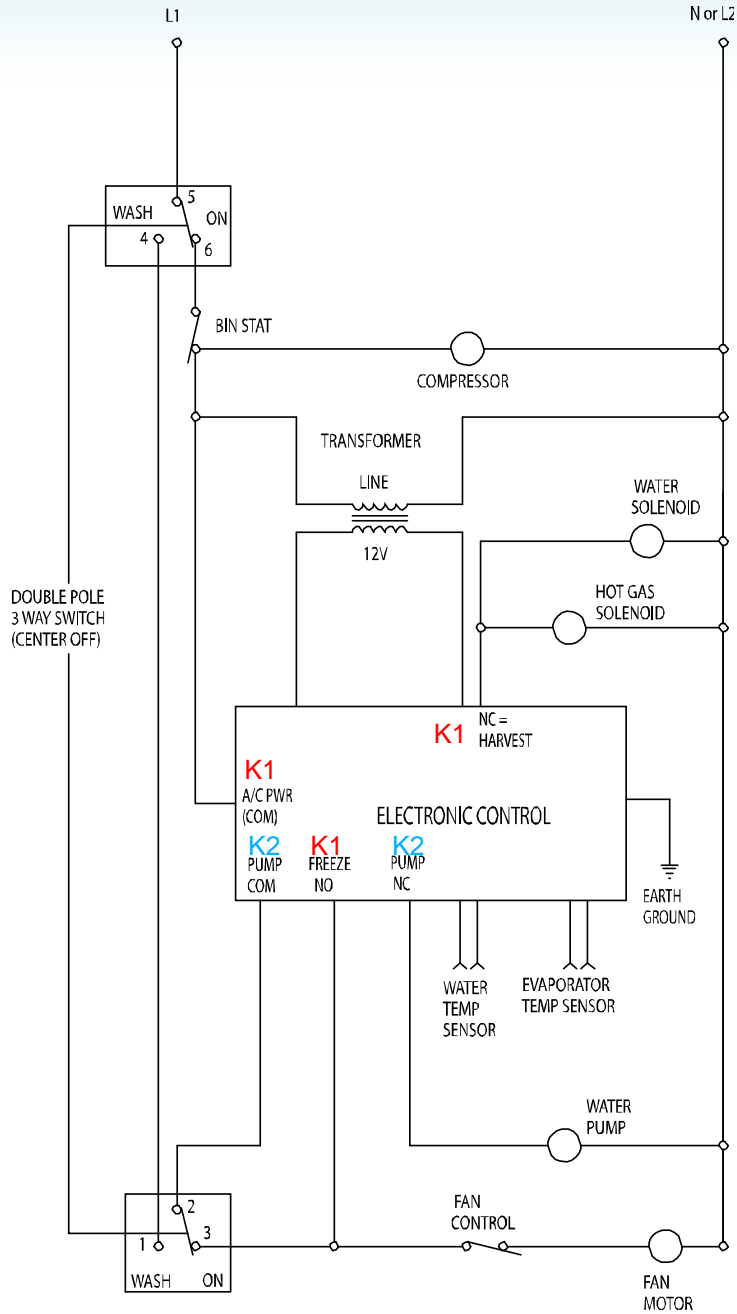
Controller Information

Ice bridge
and harvest
time setting
indicators

Freeze Mode
Light

Timer Light





Cycle Times – Free Standing

- CU0415
 - 25 minutes at 70/50
 - 38 minutes at 90/70
- CU0715
 - 17 minutes at 70/50
 - 25 minutes at 90/70
- CU0920
 - 15 minutes at 70/50
 - 18 minutes at 90/70

Note: Cycle times will be longer when built into a cabinet

Time to initially fill bin

- 70/60 conditions to first shut off
 - CU0415 – 13 hours
 - CU0715 – 8 hours
 - CU0920 – 9 hours
- Commonly restarts for more run hours after first shut off

Ice Bridge

3/16



Adjustments

Increase or
Decrease
Bridge
Thickness

Increase or
Decrease
Harvest Time



Correct Settings

- Bridge Thickness

- Must release ice as a unit, bridge will be about 3/16 inch and there will be a hollow part in the cube

- Harvest Time

- Must continue long enough to release the ice, plus 10 to 20 seconds more.
- Water fills during harvest, short harvest may increase scale build up
 - Add time if needed to reduce scale build up
 - 90 seconds is suggested minimum time in typical water

Factory Settings

	Ice Bridge Lights on STEADY	Ice Bridge Lights BLINKING	Harvest Lights on STEADY	Harvest Lights BLINKING
CU0415	1	1	3	1
CU0715	2	0	3	1
CU0920	2	1	3	0

Ice Bridge and Harvest Time Settings

- 10 settings on 5 lights each
- 1 blinking is minimum, 5 steady is maximum
 - Steady light = 2
 - Blinking light = 1
 - Examples
 - 3 lights on steady = 6
 - 3 lights steady, 1 blinking = 7
- Adjust before timer light is on or wait till next cycle



Internal Timings

- Freeze timer (timer light on)
 - 7 minutes, starts when evaporator thermistor temperature falls to preset point
- Harvest timer (timer light on)
 - 20 seconds, starts when evaporator thermistor temperature warms to preset point
- Minimum harvest time
 - 35 seconds
- No maximum or minimum freeze time

How It Works – Starting / Restarting

- Closed bin thermostat and Master Switch to the ON position power compressor and controller
 - 2 minute harvest cycle (adds water), then freeze begins
 - Fan off until discharge pressure builds to 150 PSIG
 - Pump on until water temp falls to preset point, then off one time that cycle for 30 seconds
 - Freeze continues until a thermistor's resistance on suction line triggers controller timer, timer light switches ON, 7 minutes till harvest

How It Works

- Harvest cycle
 - Pump off
 - Fan off
 - Hot gas valve on
 - Inlet water solenoid valve on
 - Cycle continues until suction line temperature warms to preset point, triggers timer in controller to end the cycle
- Bin thermostat can shut unit off at any time

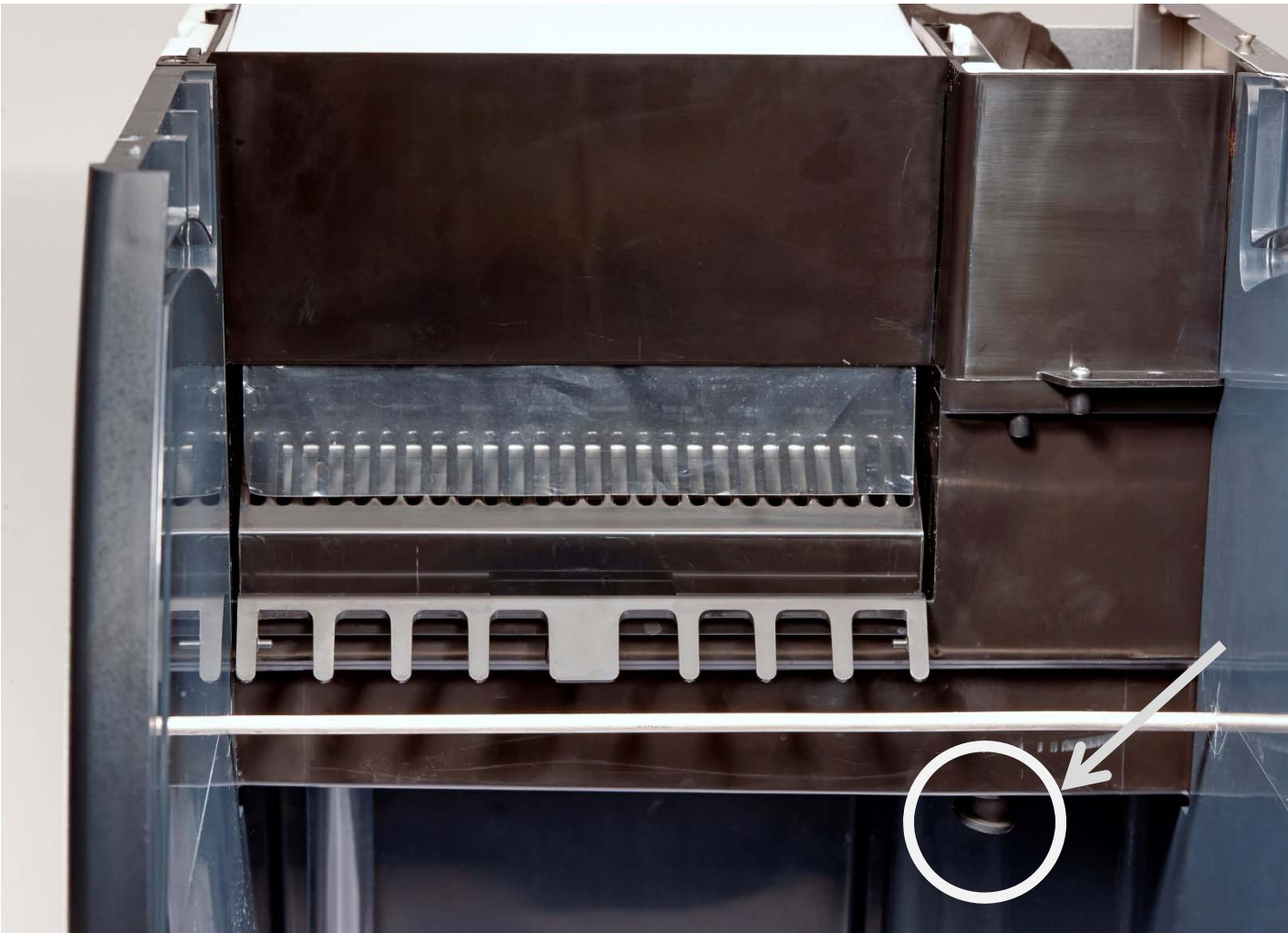
Cleaning and Maintenance



Water System Cleaning

- Remove front panel and switch the Master Switch to OFF, wait 1 minute then switch it to ON.
 - Manual harvest, releases any ice on the evaporator
- Switch unit off, discard all ice.
- Drain reservoir by pulling the drain plug and then putting it back.
- Mix 5 oz of Scotsman Clear 1 scale remover and 2 ½ quarts of warm water.

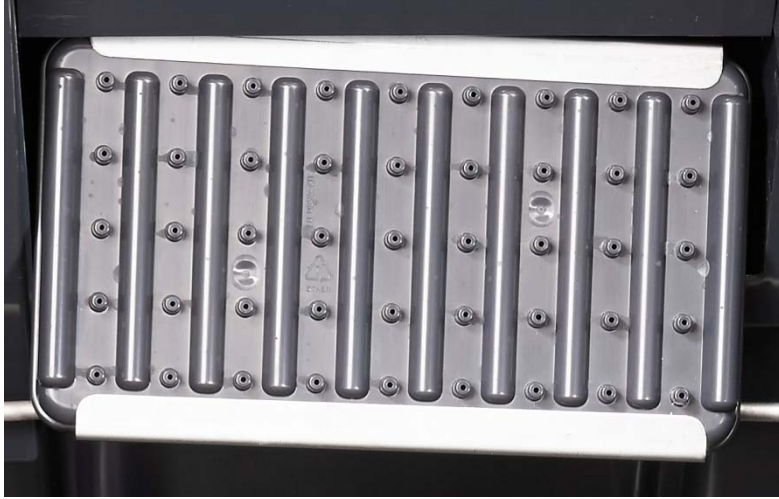
Reservoir Drain Plug



Scale Removal

- Pour solution into the reservoir
- Move master switch to the Wash position
 - Pump will be on
- Operate for 10 minutes or more, then move switch to OFF.
- Drain reservoir.
- Remove spray platform, inspect all jets, clear any that are restricted

Spray Platform



Inlet engages clip in reservoir, pull forward to remove



Spray Platform Assembly



Sanitize

- Use locally approved sanitizer
 - Mix one packet of Stera Sheen Green Label with 2 gallons of warm water
 - Fill empty reservoir with sanitizer
 - Move master switch to Wash for 2 minutes
 - Drain reservoir into bin
 - Thoroughly wash all interior surfaces of the bin, bin door and freezing compartment with the sanitizer solution
 - Fill reservoir with clean water, switch to Wash for 1 minute, drain reservoir

Maintenance and Cleaning

- Clean air cooled condenser
 - Vacuum and brush dirt from fins



Service Diagnosis

- No ice

- No water, check water filters and supply to unit
- No water, check inlet water solenoid valve
- Nothing operating, check power to unit
- Nothing operating, check bin thermostat
- Nothing operating, check master switch position
- Nothing operating, check transformer
- Nothing operating, power to controller, no lights on it.
 - Replace controller.

Service Diagnosis

- No ice, compressor and fan are on, pump not spraying water
 - Check for water in reservoir
 - Check drain plug for leaks
 - Check for pump hose disconnected
 - Check pump motor voltage. If none and blue Freeze mode light is ON, wait 30 seconds. If still no voltage, replace controller (pump relay failure)

Service Diagnosis

- No ice, pump spraying water, fan motor and compressor are off
 - Master switch in Wash position
- No ice, pump spraying water, compressor on, fan motor not turning
 - Fan motor open, no power or stuck
 - Fan pressure control open
 - Should be closed at room temperatures over 70 F.
 - Opens at 100, closes at 150 PSIG

Service Diagnosis

- No ice, everything operating, poor spray to evaporator
 - Partial water fill in reservoir
 - Spray platform leaking or jets restricted
 - Check / Clean spray platform
- No ice, everything operating, good spray to evaporator
 - Too much water, check inlet water solenoid valve for leak thru

Service Diagnosis

- No ice, everything operating, water in reservoir is hotter than supply water
 - Hot gas valve not shutting off / leaks thru
- No ice, everything operating
 - No refrigeration, check suction line temperature, should begin to chill during freeze mode
- No ice in bin, evaporator has ice on it
 - No heat for harvest, ice does not release
 - Hot gas valve not opening. Check inlet water solenoid valve, if it is adding water there is power to the hot gas valve.

Service Diagnosis

- No ice in bin, evaporator has ice on it, does not release in time
 - Very cold water supply, increase harvest time
 - Damaged evaporator, check plating
- No ice, compressor is off
 - Compressor relay failure, check current relay
 - Compressor overload open
 - Compressor overheated, check refrigeration system for proper charge
 - Compressor will not start, check windings

Service Diagnosis

- Makes ice, but ice is cloudy or not completely formed
 - Spray jets restricted, clean machine
 - Lack of rinse water due to hot room temperature
 - Adjust harvest time longer to drain more water
- Makes ice but they are blocks or shells
 - Ice bridge wrong size
 - Evaporator thermistor out of calibration
 - Evaporator thermistor failure
 - Poor contact of thermistor probe to suction line

Evaporator Thermistor

- Typically triggers timer at about 3.3 degrees F.
 - 76,790 ohms
- If thermistor is out of range, open or shorted controller operates on preset freeze and harvest times
 - Signal of evaporator thermistor failure is **all green lights on controller blink together**
 - Timed cycles may make ice too thick or too thin

Service Diagnosis

- Makes ice but does not fill the bin, cycle times are correct
 - Bin thermostat opens and shuts machine off before bin is full, check room temperature
 - Adjust thermostat if room is below 60 degrees F.
 - Machine located over 2000 ft. above sea level, correct by making thermostat altitude adjustment.
 - Thermostat out of calibration, replace
 - Bin drain restricted
 - Drain tubing vented? Correct slope and size?
 - Flush or blow out bin drain

Service Diagnosis

- Makes ice but does not fill the bin, cycle times are too long
 - Air cooled condenser is dirty, clean it
 - Too much water, inlet water valve leaks thru
 - Air flow restricted
 - Placed in closet or other very small room?
 - Room air too hot
 - Capacity normally reduced in hot air temperatures or when built into a cabinet with minimal clearance

Replacement of Selected Components

- Curtain

- Remove top panel
- Remove evaporator cover
- Pull curtain up and out of its slot



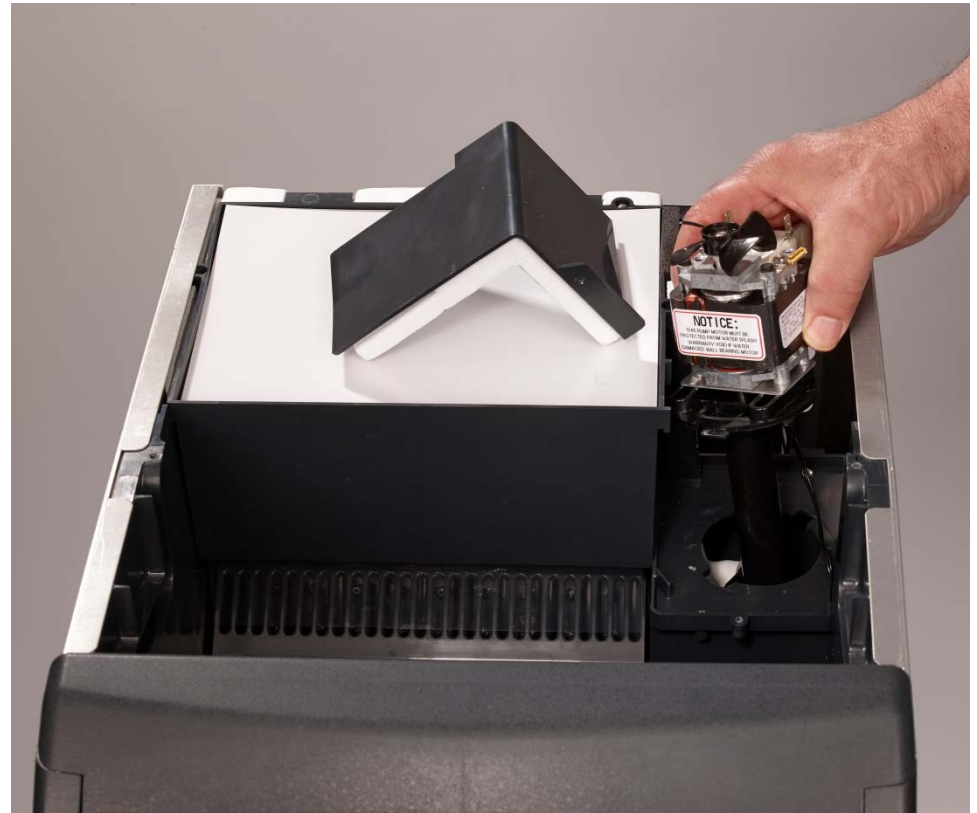
Replacement of Selected Components

- Cube Deflector
 - Lift up at reservoir edge, twist slightly and pull out
 - Snaps onto reservoir edge



Replacement of Selected Components

- Water Pump
 - Disconnect power
 - Remove top panel
 - Remove pump cover
 - Disconnect wires and pump hose
 - Rotate pump CW and pull up and out



Replacement of Selected Components

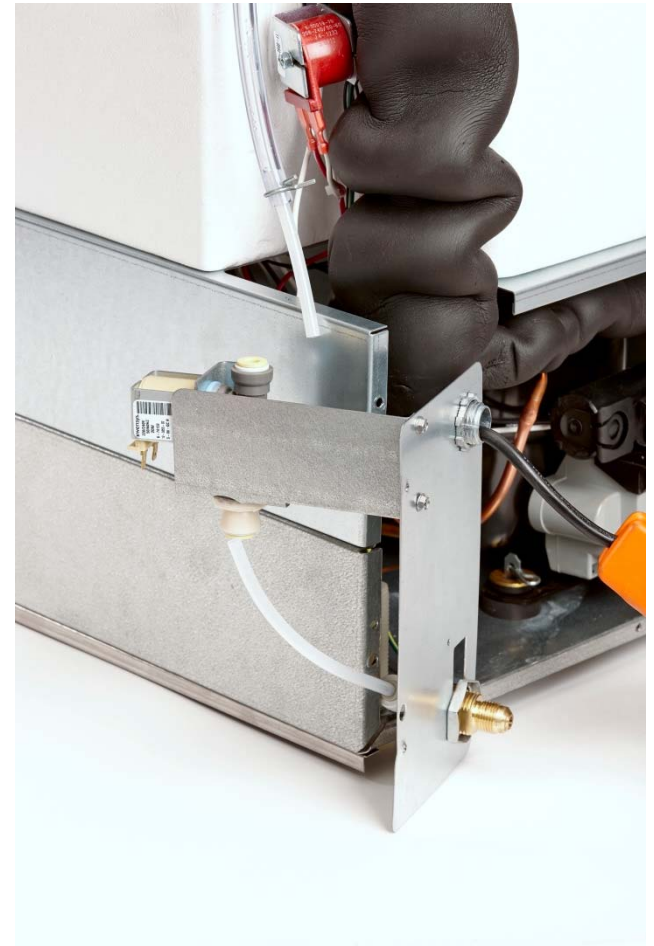
- Bin Thermostat
 - Disconnect power
 - Remove front, top and left side panels
 - Pull capillary tube out of sensing tube
 - Pull capillary tube into bottom of unit
 - Disconnect wires at thermostat and remove thermostat from unit



Replacement of Selected Components

- Inlet Water Solenoid Valve

- Shut water & power off
- Remove
 - top, front, back and right side panels
 - Utility panel
 - screws holding valve bracket to utility panel
 - screws holding valve to bracket
- Push in collets to release tubing from valve
- Unplug wires & remove valve



Cabinet Removal

- Remove front, back, side and top panels
- Remove door
- Drain water, disconnect power and water
- Pull thermostat cap tube out
- Remove evaporator cover



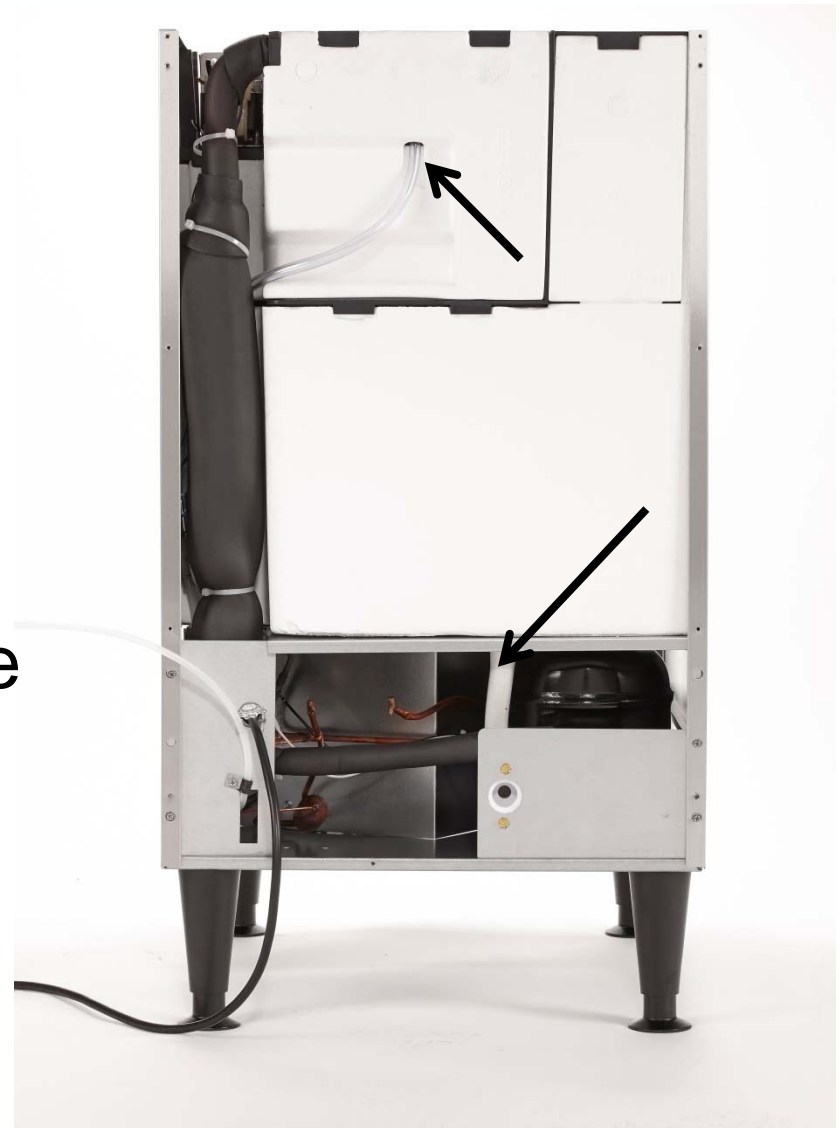
Cabinet Removal

- Remove screws holding evaporator to its frame.
- Lift evaporator up and out of the way
 - Support as needed



Cabinet Removal

- Disconnect wires from water pump
- Remove thermistor from pump hose
- Disconnect bin drain hose
- Disconnect water supply hose from evaporator platen

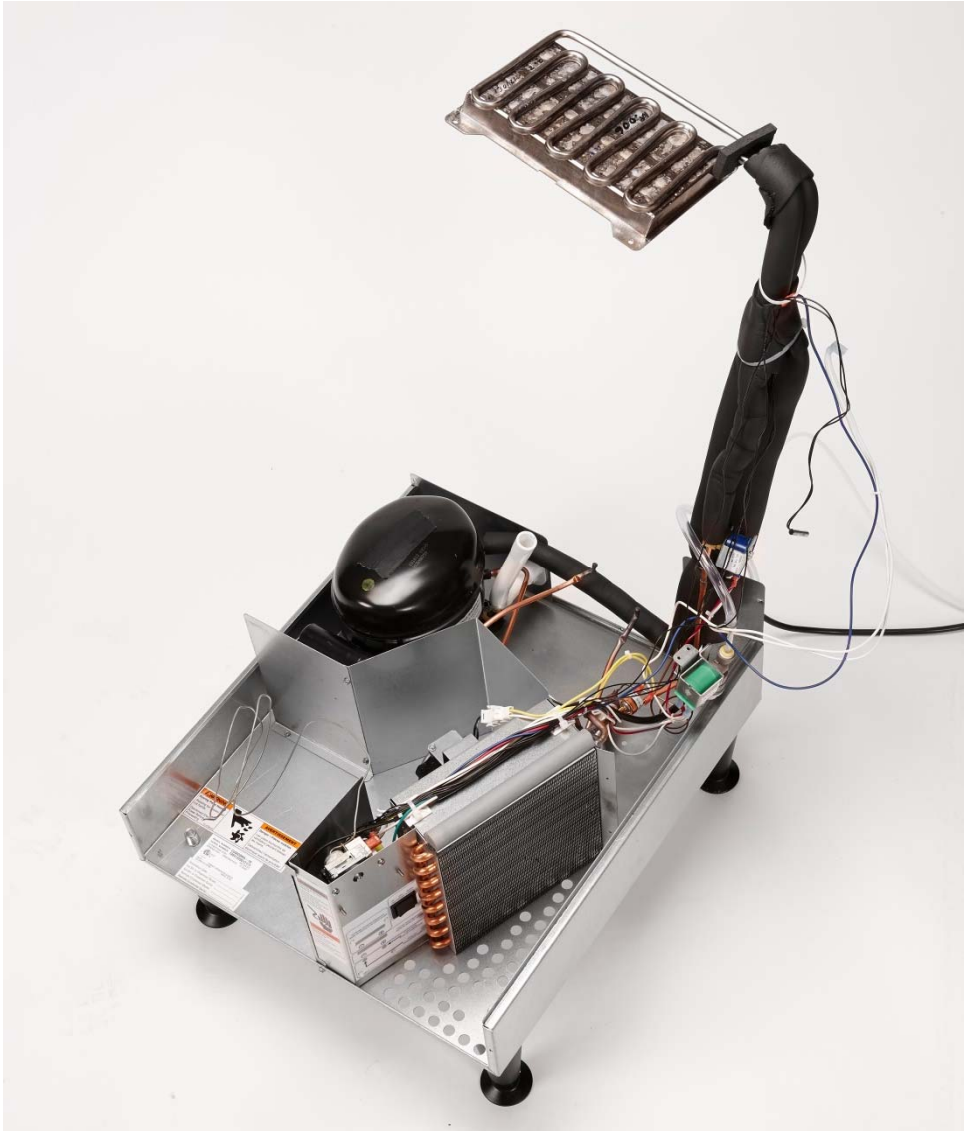


Cabinet Removal

- Lift bin with reservoir off the deck
- Remove deck cover



Cabinet Removed



Questions?

