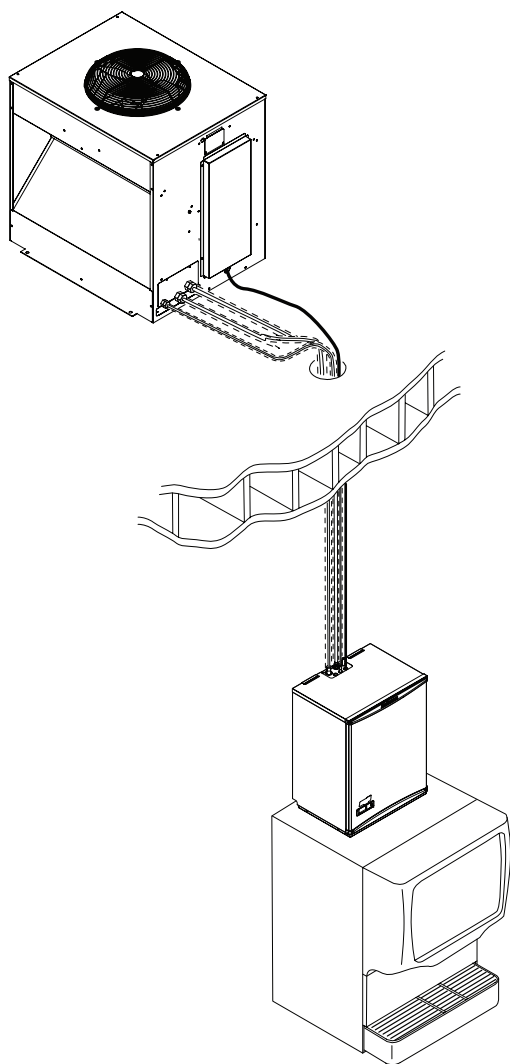




Installation and User Manual for Eclipse Cuber  
**Prodigy Plus E Series** model  
EH222 E with ECC Condensing Unit



# **EH222 E and Condensing Unit Remote Low Side Cuber User Manual**

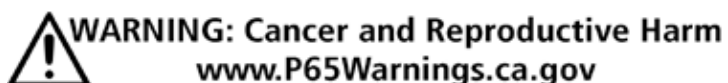
## **Introduction:**

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This manual covers the assembly, installation, start up, operation and maintenance of the 800 and 1000 remote low side cuber systems.

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# EH222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Configuration

A remote low side cuber system includes two sub systems: an ice making head and a remote air cooled condensing unit. This manual covers the EH222 head and the condensing units that go with it.

The ice making heads are designed for use indoors in a controlled environment. The remote condensing units are designed to operate outdoors. Each sub-system has limits for power, water and temperature.

#### Operational Limitations:

	Minimum	Maximum
Air Temp (at head)	50°F	100°F.
Air Temp (CU)	-20°F.	120°F.
Water Temp	40°F.	100°F.
Water Pressure	20 psi	80 psi
Water Conductivity	10 microSiemens/cm	any
Voltage (at head)	104	126
Voltage (CU)	198	253

CU= Condensing Unit

Do Not operate the machine in conditions beyond these limitations. Doing so will void the warranty.

System Size	Condensing Unit (CU)		Ice Making Head	
	Model	Electrical (volts/Hz/phase)	Model	Electrical (volts/Hz/phase)
800	ECC0800-32E	208-230/60/1	EH222SL-1E	115/60/1
800	ECC0800-3E	208-230/60/3	same	same
1000	ECC1410-32E	208-230/60/1	same	same
1000	ECC1410-3E	208-230/60/3	same	same

Scotsman ice systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed common agency standards.

Scotsman assumes no liability of responsibility of any kind for products manufactured by Scotsman that have been altered in any way, including the use of any part and/or other components not specifically approved by Scotsman.

Scotsman reserves the right to make design changes and/or improvements at any time. Specifications and design are subject to change without notice.

#### Warranty

Refer to the warranty coverage in effect when the equipment was sold. Warranty statements are included with each product.

#### Systems:

Ice making heads and condensing units have their own model and serial numbers. They must be combined to create a remote cuber low side system.

Notes: Voltage Codes are at the end of the model number. Codes read Voltage/Hertz/Phase. Those related to these products include:

-1 = 115/60/1

-3 = 208-230/60/3

-32 = 208-230/60/1

#### System Information

Tubing kits are required to connect the head to the condensing unit.

Interconnecting 24 volt control wire ships with the condensing unit.

**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Specifications and Location Information**

Model	Electrical volts/Hz/phase	Minimum Circuit Ampacity	Maximum Fuse Size	System Charge, oz of R-404A	Cabinet Size* w" x d" x h"	Unit Weight (lb)
EH222SL-1E	115/60/1	1.13	15	shipped w/none	22 x 16.5 x 29	~100
ECC0800-3E	208-230/60/3	10.6	15	192	32 x 39 x 39.75	~300
ECC1410-32E	208-230/60/1	15.8	30	248	32 x 39 x 39.75	~310
ECC1410-3E	208-230/60/3	11.6	20	248	32 x 39 x 39.75	~310

\* See cabinet drawings for detailed dimensions.

**Location Limitations**

Maximum Distance between Head and Condensing Unit: Limited to the length of the longest available single tubing kit, 75 feet.

Maximum Condensing Unit Elevation over Ice Making Head: 35 feet.

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Note: Elevations greater than 20 feet require installation of a suction line trap at the 20 foot mark.

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Maximum Ice Making Head Elevation over Condensing Unit: 15 feet.

**Line Routing:**

- Allowed: One rise after a drop.
- Allowed: One drop after a rise.
- Not Allowed: More than one rise after a drop
- Not Allowed: More than one drop after a rise.

**Model Number Locations**

**Ice Making Head**

The dataplate on the back of the ice machine contains the model number, serial number and electrical data.

A second plate, located behind the front panel at the lower right front, also lists the model and serial numbers.

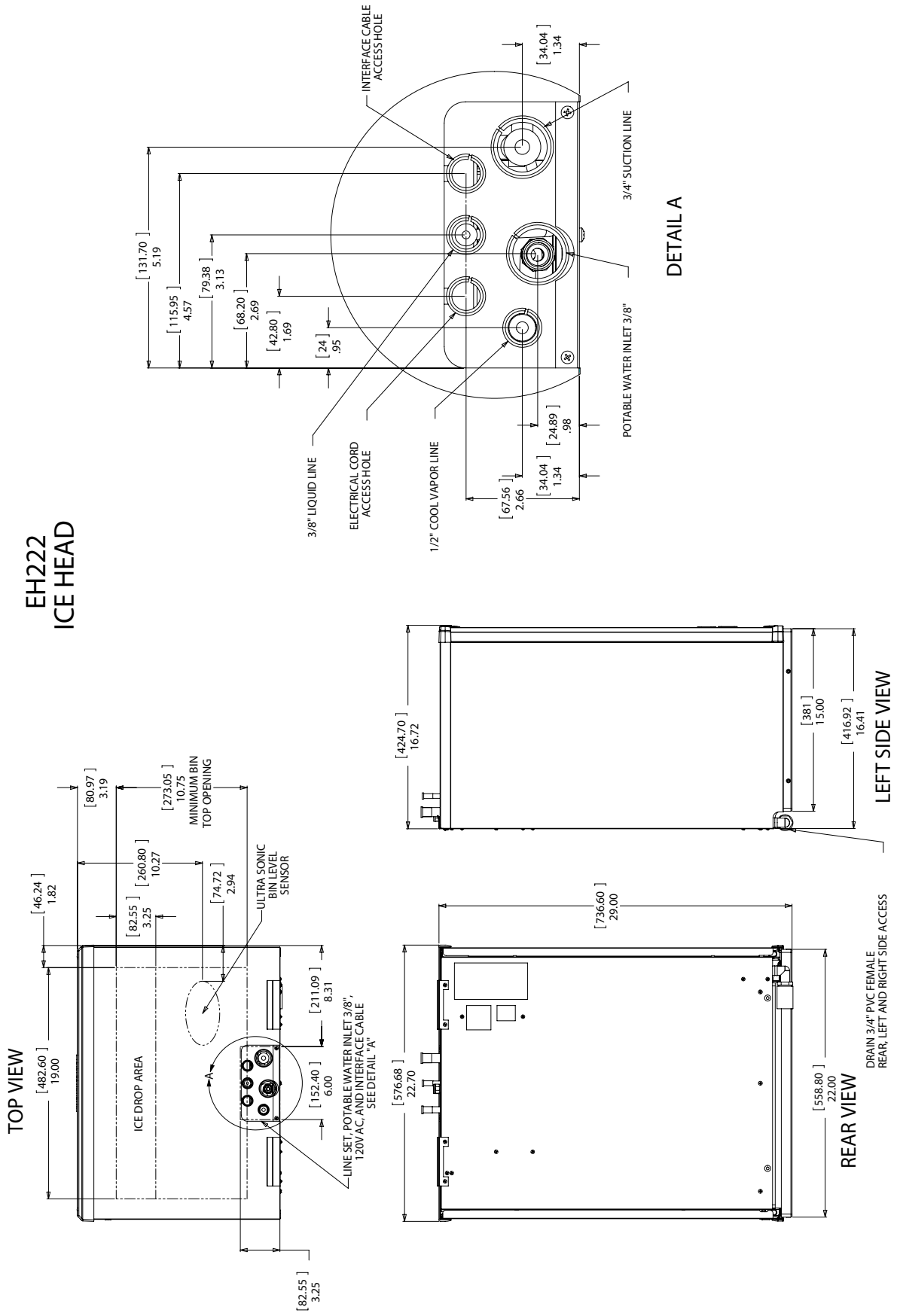
**Condensing unit**

The dataplate on the end contains the model number, serial number, electrical data and system refrigerant charge.

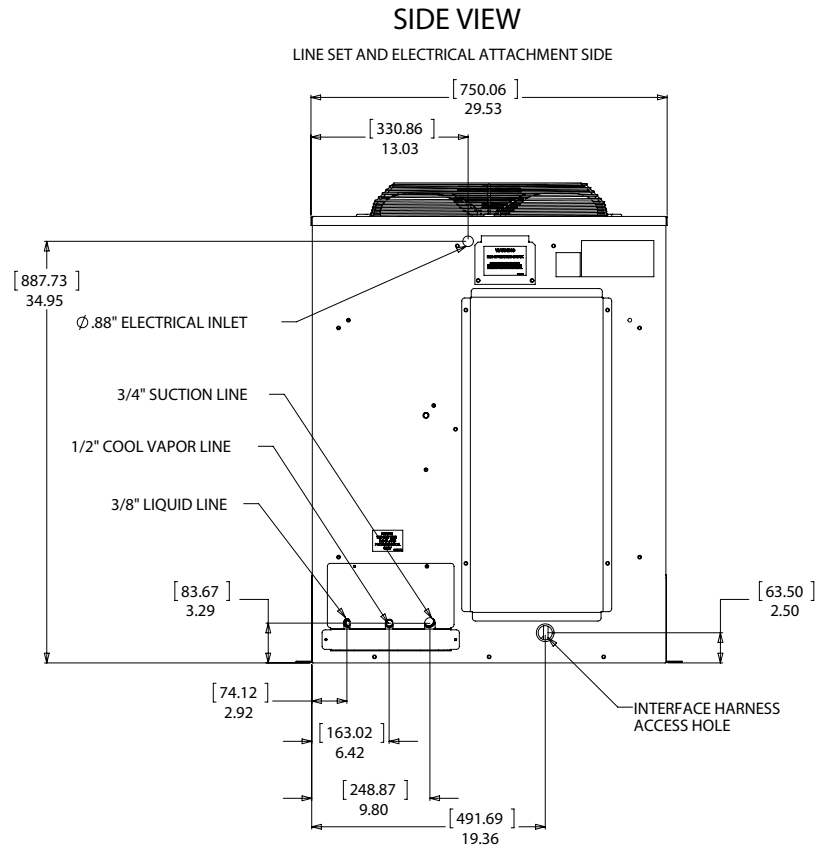
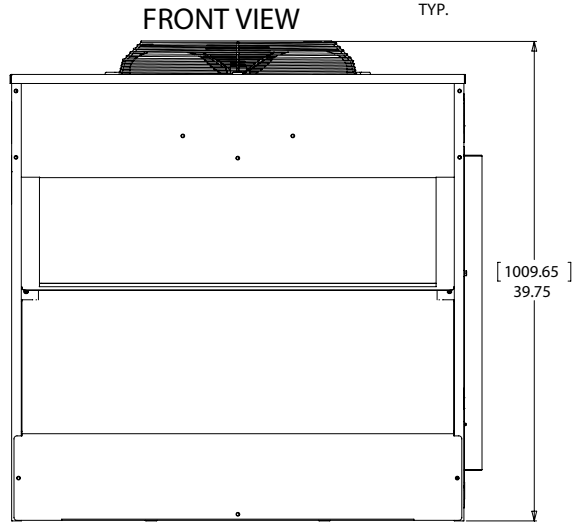
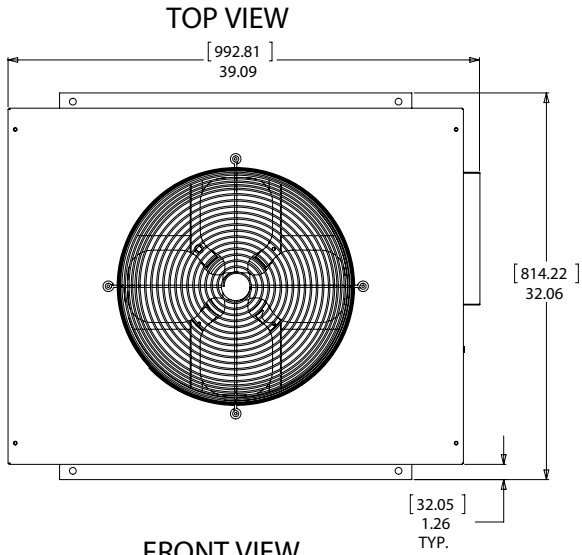
A second plate, located behind the side panel on the deck, also lists the model number, serial number and refrigerant charge.

**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Cabinet Drawings, Ice Making Head**

**EH222  
ICE HEAD**



**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Cabinet Drawings, Condensing Unit**



# **Eh222 E and Condensing Unit Remote Low Side Cuber User Manual Pre-Installation Details**

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Note: The ice making section cannot be stacked vertically.

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Accessories such as bin adapters and tubing kits are required to complete the installation.

## **Dispenser Adapter Kits:**

- Cornelius ABS: KBTABS ED150: KBT40
- Scotsman ID150: KBT40
- Scotsman ID200 or ID250: KBT41

## **Bin Adapter Kits:**

- B530P or B530S: KBT32
- B948S: KBT34

## **Tubing Kits:**

- 20 foot: 3BRTE20-EH
  - 35 foot: 3BRTE35-EH
  - 50 foot: 3BRTE50-EH
  - 75 foot: 3BRTE75-EH
- 

Note: Line set may have quick connects. The condensing section may have quick connects. See refrigeration system detailed instructions connection details.

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## **Items required for installation:**

- Ice making head
- Condensing unit (includes interconnecting control system wire)
- Tubing kit. 20', 35', 50' or 75' triple line set (liquid, vapor and suction)
- Bin or dispenser adapter

## **Special Considerations**

The ice making section's footprint is 22" wide by 16.5" deep. The refrigeration connections can be routed up or to the back. The drain may be routed out the back at any position left to right; it may also be routed to either side.

## **Water**

Pure water does not exist. All water supplies contain some amounts of impurities, although potable water is, by definition, fit for human consumption. Because the contents of the water to an ice machine directly impact its performance, consideration should be given to improving the water's quality.

There are two ways water can contain impurities: in suspension or in solution. Suspended solids can be filtered out of the water. In solution or dissolved solids must be diluted or treated. Water filters are recommended to remove the suspended solids.

Some filters or filter systems have treatment chemicals in them for treating the suspended solids.

This ice machine has an adjustment for the amount of water rinsed or purged. Water use adjustments are customer convenience adjustments; they are not factory defects and are not covered by warranty.

**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Create the System**

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Plan the installation. The system consists of three parts: the ice making head, the condensing unit and the interconnecting tubing. Of these, the biggest variable is the interconnecting tubing.

Tubing: The tubing consists of three insulated and sealed soft copper tubes. One tube, the liquid line, is 3/8" OD. The vapor tube is 1/2" OD and the suction tube is 3/4" OD. A site inspection will determine what length of tubing is required for the installation.

In 2013 Scotsman made a change to the Eclipse tubing kits:

- Prior Tubing Kits: They each contain a small holding charge of R-404A and have quick connects at the ends.
- Current Tubing Kits: They do not contain any refrigerant and do not have quick connects.

**Either type can be used to connect the head and condensing unit.**

Check condensing unit for quick connects. If none, recover refrigerant from tubing and cut the quick connects off.

Lineset	Ice machine head and condensing unit both have stubs	Ice machine head has stubs, condensing unit has quick connects.
Has Quick Connect Fittings	Cut quick connects off both ends	Cut off quick connects at condensing unit end only
Does NOT have Quick Connect Fittings	Use as supplied	Use as is at head, obtain kit KTE6-EH, use 3 of 6 fittings on condensing unit end.

**Excess tubing must be shortened at the job site.**

Installations with greater than 20 feet of vertical lift between ice machine and the compressor require a suction line trap. The suction line requires careful handling and large radius bends to prevent kinking.

Roof mounting: Some installations will require the use of a hoist to lift the components to the roof.

Pad mounting: The condensing unit may be located below the ice making section, up to a limit of 15 feet.

Distance from unit: Limited to the length of the available tubing.

Elevation: Condensing unit limited to 35 feet above the ice making section.

Condensing Unit: Electrical power must be supplied to the condensing unit, it will be separate from the head.

Ice making section location and attachment: The unique footprint of the EH222 requires adapter kits to allow placement on dispensers and bins.

The remote tubing connections are at the top of the machine, and connections should not be made until the machine is nearly in its final installed position.

The 115/60 Hz ice making section is cord connected and requires an outlet within 6 feet of the installation.

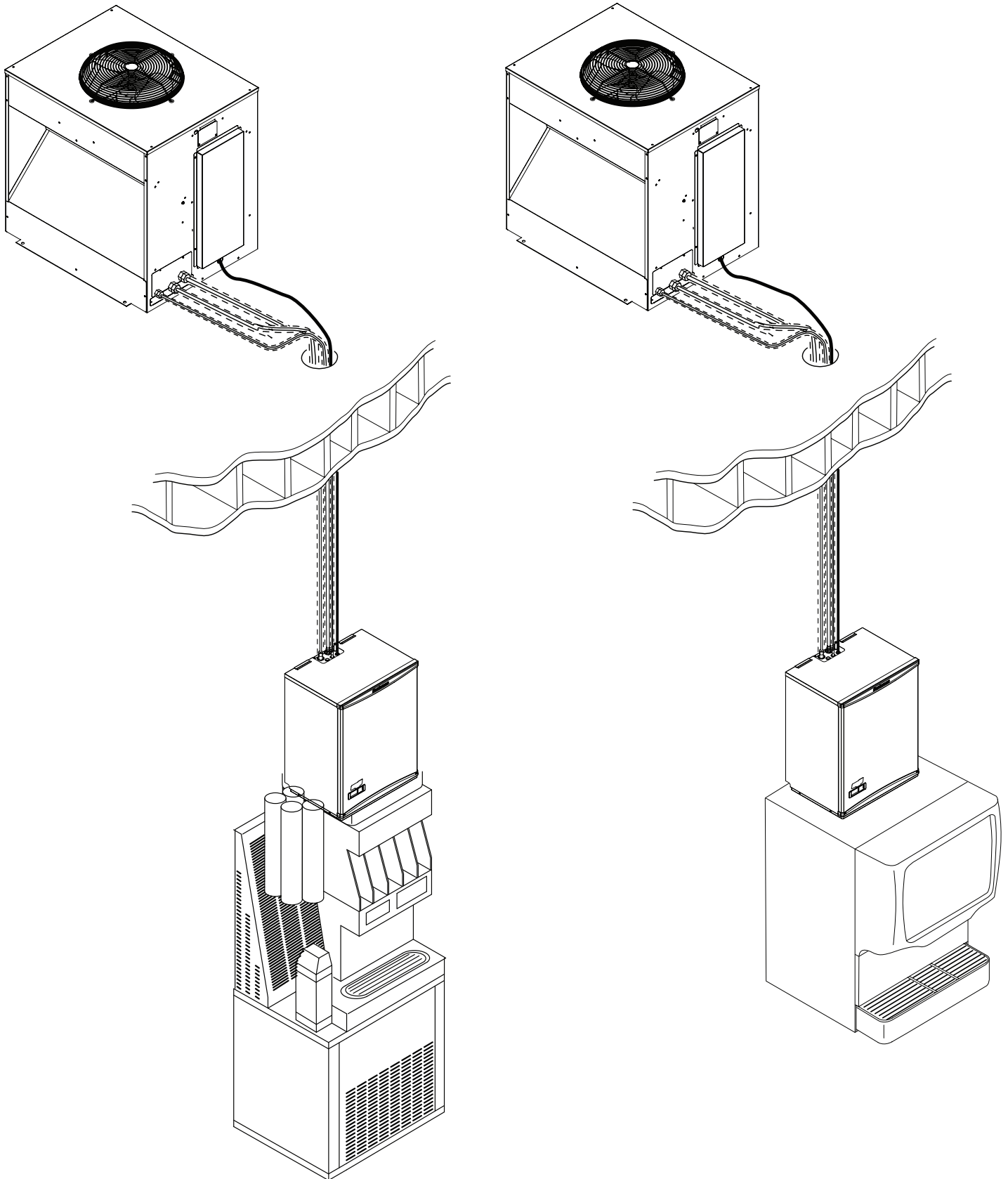
Interconnecting wires: An interconnecting wire harness is included with the condensing unit. One end plugs into the ice making section and the other into the condensing unit. The system will NOT operate without this harness.

Exposed tubing: Minimize the amount of tubing exposed outdoors.



**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Completed System Example**

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# **Eh222 E and Condensing Unit Remote Low Side Cuber User Manual Place Remote System**

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## **Roof preparation**

Most installations of this system will place the condensing unit on the roof of a building. The roof must be physically able to accept the load of the equipment and the roofing material must be prepared to prevent water leaks.

Follow local codes for the placement and attachment of the equipment.

## **Location**

The condensing unit requires unobstructed air flow to operate efficiently. A four foot space between each intake side and a wall or other cabinet is recommended.

Do not place where it will pick up hot discharged air from an air conditioner or other refrigeration system condensing unit.

Space must also be reserved for service on the condensing unit.

## **Roof Piercing:**

The roof (or wall) must have a passage large enough for the three refrigeration tubes and the control wire to pass through. The minimum recommended size is 4" ID. In most areas the power supply may also pass through the same passage. If there isn't a passage one must be created. In most cases this must be done by a licensed and bonded roofer in order to maintain the roof's integrity.

In all cases the line set will need to be shortened to fit.

Do NOT leave excess line set exposed outdoors, especially on a roof.

## **Refrigerant Recovery and System Evacuation Notice**

**In the event the refrigerant must be recovered from this system and the system evacuated, recover and evacuate from the three ball valve access valves with the ball valves open.**

## **Roof Pipe Curb or Pitch Pocket:**

To avoid potential kinking of the refrigeration tubing, avoid small, tight radius types of covers on pitch pockets.

## **Suggestions:**

In most cases a mechanical lift, boom truck or crane will be required to hoist the condensing unit.

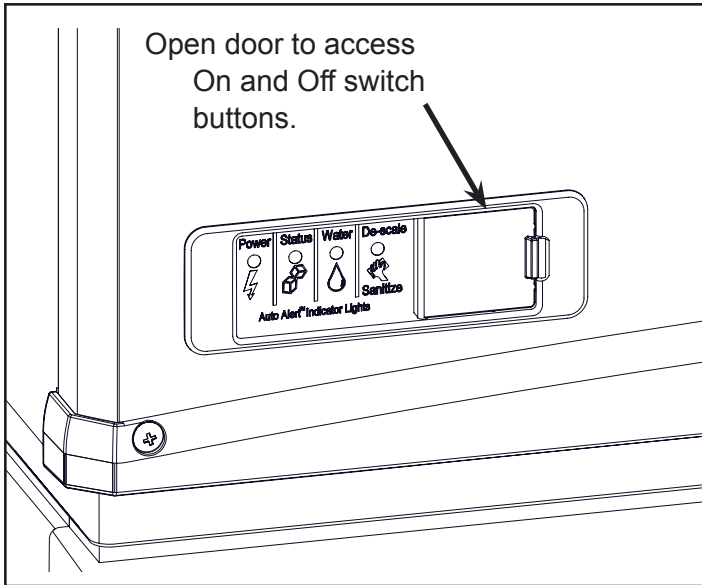
Mount unit to roof rails or curbs and secure with lag screws or similar field supplied fasteners.

Orient the assembled unit so that the unit's mounts are parallel to the pitch of the roof to allow water to drain freely.

Do NOT place the unit directly onto roof rock.

**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Lower Light and Switch Panel**

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### Lower Light and Switch Panel

This user accessible panel provides important operational information and duplicates the lights and switches on the controller. It also allows access to the On and Off buttons that operate the ice machine.

Sometimes access to the switches should be limited to prevent unauthorized operation. For that purpose a fixed panel is shipped in the hardware package. The fixed panel cannot be opened.

To install the fixed panel:

1. Remove the front panel and remove the bezel.
2. Spread the bezel frame open and remove original door, insert fixed panel into bezel. Be sure it is in the closed position.
3. Return bezel to panel and install panel on unit.

# **EH222 E and Condensing Unit Remote Low Side Cuber User Manual Place Ice Making Head**

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Remove from carton.

Place adapter kit onto bin or dispenser top. If adapter does NOT have gasket tape install tape such as Scotsman part number 19-0503-04. The adapter to ice head base MUST be sealed with gasket tape or food grade sealant.

## **Attachment**

ABS (Automatic Beverage Dispenser) in drive up installations: Route refrigerant tubing and install drain and water supply tubing onto ice making section before placing unit on the dispenser.

Place EH222 onto adapter, do not secure at this time. Uncoil power cord and route to the power supply.

Plug interconnecting control wire to the wire harness in the ice making head.

Located at the top panel:

- Refrigeration connections.
- Interconnecting control wire.
- Access port for water supply.
- Power cord.

The drain may be routed to the left or right, allowing the ice making section to be placed with its back tight against a wall.

## **Water and Drain**

The ice maker requires an adequate potable water supply and a gravity drain.

Determine how the drain will be connected to the ice making section.

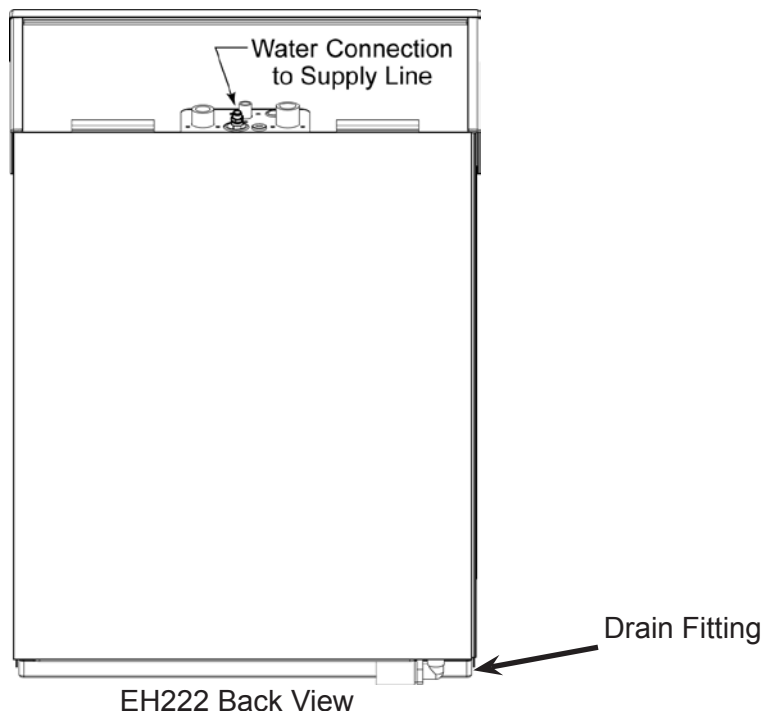
- If access is available behind the unit, route the drain in from the back.
- If the unit is to be flush mounted to the back of the dispenser and tight against the wall, route the drain out either the left or right.

In some tight situations it will be necessary to assemble the ice making section to the dispenser or bin and install the water and drain connections before placing the system in its installed position. A loop of water supply tubing will aid movement of the system.

In other tight situations the unit should have its water and drain tubing connected and stubbed out before placing on the dispenser or bin.

The drain fitting is adaptable to drain connections to the left, right and back.

The unit is shipped ready to drain right. The drain fitting elbow with PVC adapter can be rotated to drain right, left or back.



EH222 Back View

# EH222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Drain Connections

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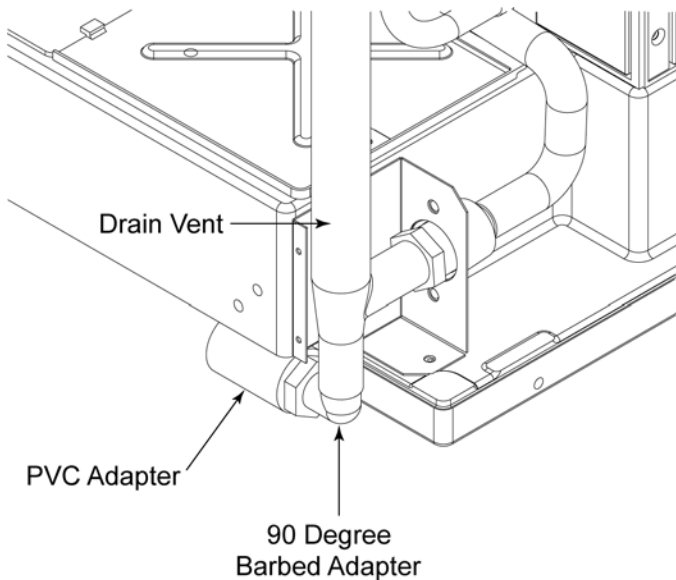
#### Right Draining:

1. Connect  $\frac{3}{4}$ " PVC to the female PVC fitting. If copper is required by code, remove the PVC connector and install a  $\frac{3}{4}$ " FPT female copper fitting onto the  $\frac{3}{4}$ " NPT male fitting. Do all soldering before connecting to the male fitting.

2. In tight locations do the next step after the unit is placed on the dispenser or bin.

3. Connect rigid drain tubing to the reservoir drain tube. Route the drain either out the back, under the unit (through the notch in the base) to the left side or to the right side. A vent is built into the unit, so no external vent is required.

Run the drain tubing to the building drain. Do not "Tee" into any other drain, including the bin or dispenser drain.



#### Left Draining: Rotate elbow to the other direction.

Connect  $\frac{3}{4}$ " PVC to the PVC fitting.

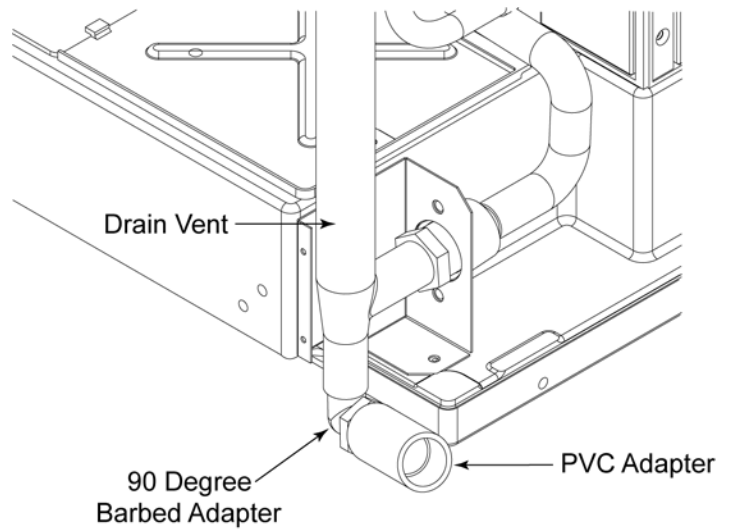
Back Draining: Rotate elbow to face the back or connect PVC directly into the  $\frac{3}{4}$ " FPT drain fitting.

No external drain vent is required, venting is internally provided for.

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Note: External drain tubing must be supported to insure that it does not move and kink the internal rubber tube.

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## **EH222 E and Condensing Unit Remote Low Side Cuber User Manual**

### **Water Supply:**

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A 3/8" flare nut on tubing is located at the top panel, near the refrigeration tubing.

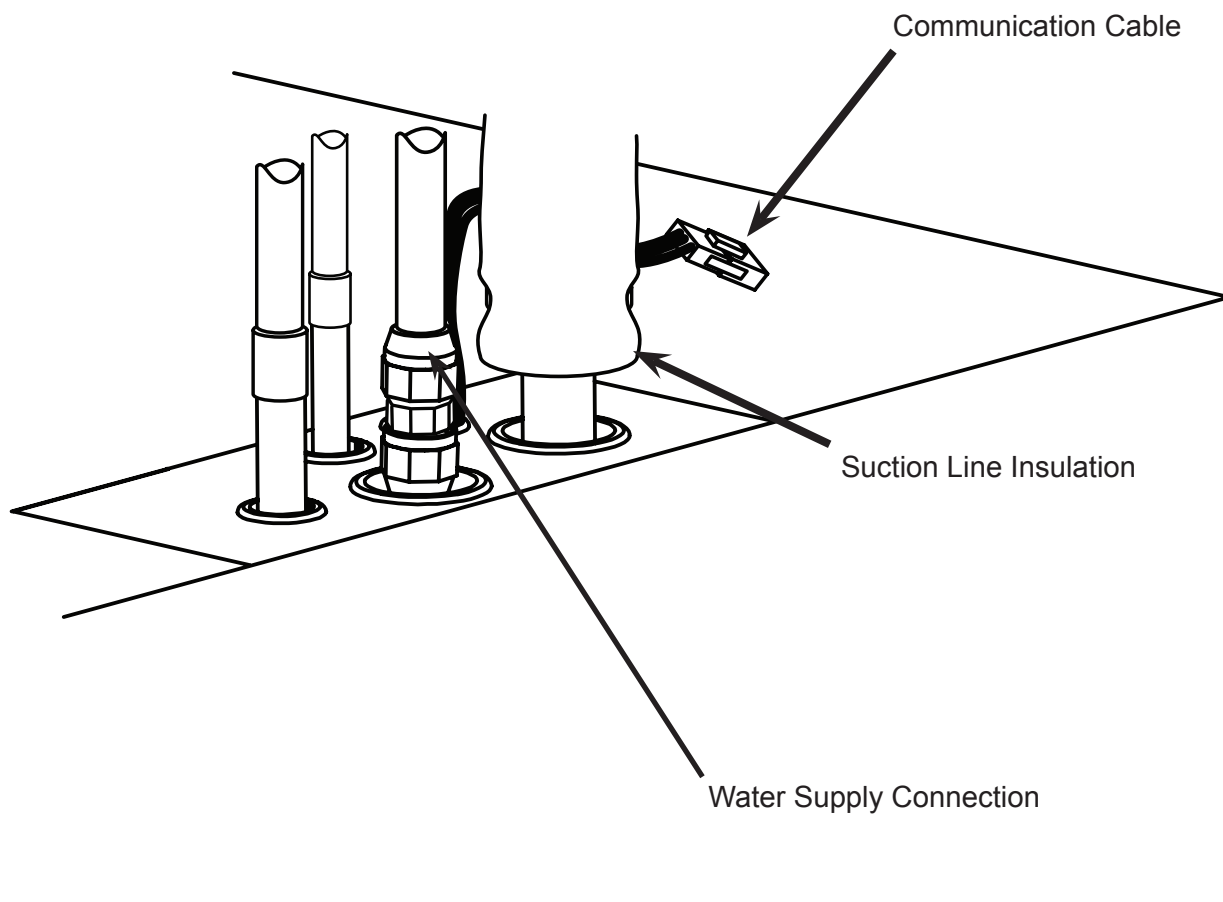
Inside the hardware bag, inside the cabinet, a 3/8" inch double male flare adapter (flare union) is supplied. Use the supplied adapter to make a 3/8" male flare fitting for the water inlet.

Connect a cold, potable water supply to the 3/8" water inlet fitting installed above. Use 3/8" OD copper or other comparable sized tubing for the water supply.

---

Note: This is an NSF listed ice machine and contains provisions for back-flow prevention in its design. No external back flow preventer is required.

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# EH222 E and Condensing Unit Remote Low Side Cuber User Manual

## Electrical:

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### Condensing Unit

Route interconnecting control wire through proper hole end of condensing unit and plug into the connection on the control box.

Route power conduit (liquid tight) and wires to the junction box of the ECC unit. Secure with the proper type of connector.

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Note: The power supply wires must be the correct size and type per the National Electric Code.

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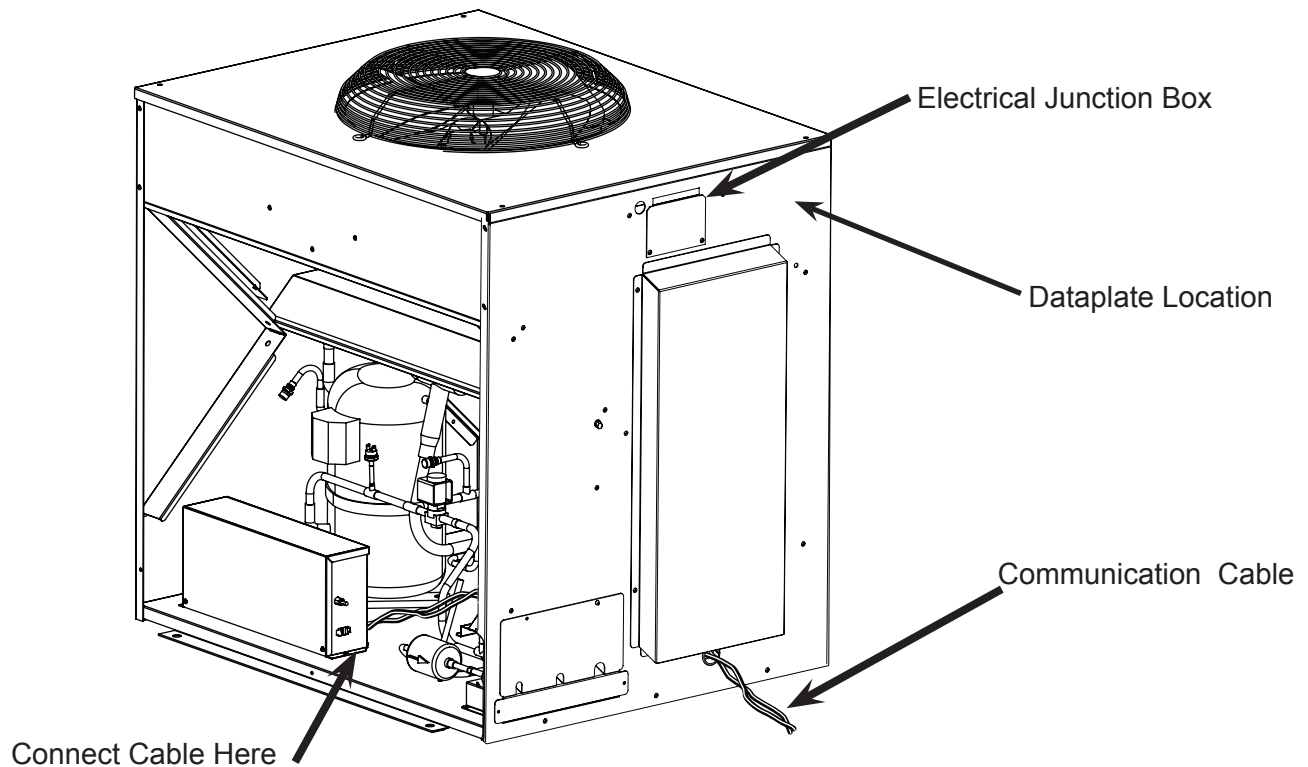
Locate the nameplate on the ECC unit for the Voltage, Phase, Minimum Circuit Ampacity and Maximum Fuse Size. Either fuses or HACR type circuit breakers may be used.

Follow all Local, State and National Codes.

**Three Phase Notice:** Check voltage between legs at contactor. If there is a “wild leg” in the three phase power supply move supply wires at the contactor so the higher voltage is on L3, which connects to the compressor motor only.

### Head

Plug head's power cord into a nearby 115 volt electrical outlet.



# Eh222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Connect Refrigeration

---

Requires brazing, steps must be performed by an EPA certified type II or higher technician.

#### At Head:

1. Remove protective plugs from all three connections and vent the nitrogen from the ice machine.
2. Route the each of the three tubes to its connection.
3. Remove the top panel and attach a refrigeration hose with depressor to the 1/2" vapor line access valve so the valve is OPEN. This is a vent for nitrogen purging.
4. Remove screws holding tubing bracket to back panel and lower it out of the way for brazing.
5. Clean tubing ends and position into couplings.

#### At Condensing Unit

1. Confirm connection valves are fully closed.
2. Remove protective plugs from all three connections.
3. Remove caps from access valve connections.
4. Remove cores from access valves.
5. Connect refrigeration hoses to access valves.
6. Connect dry nitrogen source to liquid line connection and vapor line connection.
7. Shorten tubing to correct length, clean ends and insert them into valve ends and couplings.



---

Note: Be sure tube and stubs are round, dress with swage tool if needed.

---

8. Add heat sink material to ball valve body.
9. Open nitrogen and flow 1 psi nitrogen into liquid line and vapor line tubes and braze the liquid line, vapor line and suction line tubes to the valve stubs.

#### At Head

1. With nitrogen flowing from condensing unit, braze the liquid, vapor and suction line connections.
2. Remove refrigeration hose from head. Be sure valve cap is on tight.
3. Pull tubing bracket up and secure to back panel.

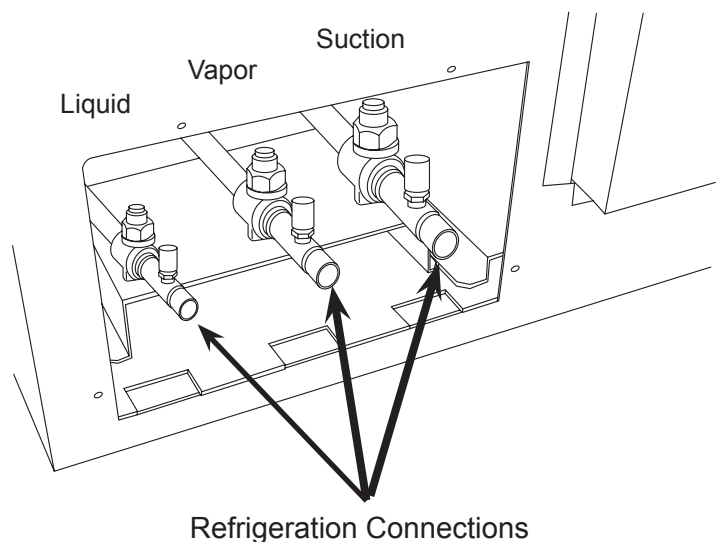
#### At Condensing Unit

1. Remove nitrogen source.
2. Return valve cores to access valves.
3. Connect vacuum pump to **all three** access valves (use two manifolds or two extra hoses and a tee) and evacuate the tubing and head to at least a 300 micron level.
4. Remove vacuum pump and add R-404A vapor to all three tubes to provide a positive pressure.
5. Leak check the braze connections and repair any leaks.
6. Open all three valves to full open.

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Note: The full refrigerant charge is contained in the receiver of the ice machine.

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# EH222 E and Condensing Unit Remote Low Side Cuber User Manual Complete the Installation

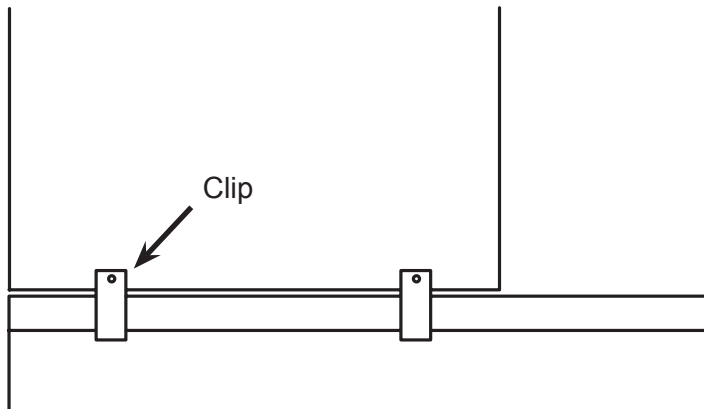
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After the utilities and refrigeration connections have been made, secure the unit to the dispenser or bin top.

Secure ice making section to dispenser or bin adapter.

Use strap/clips to secure unit:

- When used with Cornelius ABS adapter, install clip on the side of the cabinet. Clip under edge of adapter and secure to ice making section using the screws provided in the hardware bag.

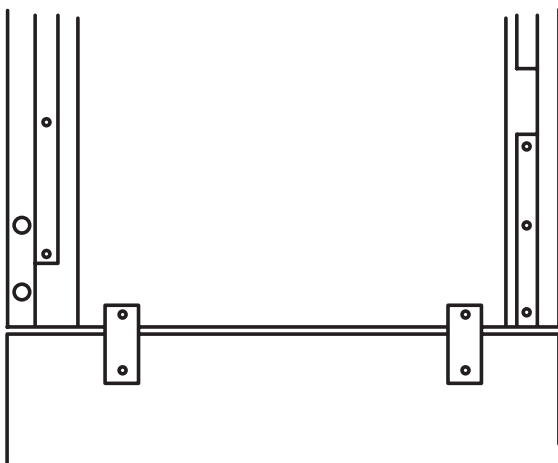


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Note: If one side will be against a wall, do not use a clip on that side. One clip is sufficient to secure the unit.

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- For use on bin adapter, use clip (as a strap) on back.



If the ice maker & bin or dispenser is not yet in its final position gently move it there.

---

Note: The refrigerant lines above the machine must be able to move freely while the machine is being moved into position.

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## Final Check List Before Initial Start Up

1. Confirm that the ice making section is installed indoors in a controlled environment.
2. Confirm that all packing materials have been removed from all products.
3. Confirm that the ice making section is level.
4. Confirm that all the refrigerant connections have been made and checked for leaks.
5. Confirm that the proper power supply has been turned on to the condensing unit.
6. Confirm that cold, potable water has been supplied to the ice making section and checked for leaks.
7. Confirm that the water supply is adequate.
8. Confirm that there is adequate water pressure and that any water filters have been checked to confirm that the cartridges do not need changing.
9. Confirm that the proper size drain tubing has been installed and properly routed.
10. Confirm that the ice making section has been connected to the proper power supply.
11. Confirm that the interconnecting wire has been routed and connected between the ice making section and the condensing unit.

# EH222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Reference for Start Up: Controller Operation

The controller has four indicator lights, a code display, four push buttons, and eleven component indicator lights.



#### Indicator Lights

- Power - on when there is power to the controller
- Status - on in ice making mode
- Water - on and blinking when there is no water
- De-scale & Sanitize - on when it is time to clean the machine

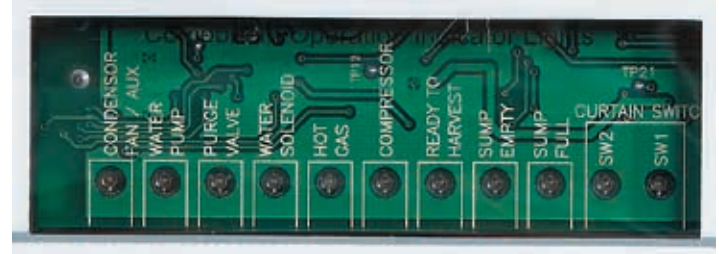
#### Code Display

- Displays status and diagnostic codes

#### Push Buttons

- On
- Off
- Manual Harvest
- Clean

#### Component indicator lights



- Fan - not used on this model
- Water Pump - on when the pump is
- Purge Valve - on when the purge valve is
- Water Solenoid - on when the inlet water solenoid valve is
- Hot Gas - on when the vapor inlet valve and harvest assist solenoid have power
- Compressor - on when the compressor contactor is energized
- Ready to Harvest - on when the ice thickness sensor has water touching it
- Sump Empty - on when there is no water touching the mid-length probe
- Sump Full - on when water is touching the shortest probe
- SW2 - on when the curtain is open
- SW1 - on when the curtain is open

#### Cycle Definitions:

**Freeze:** The refrigeration system is operating to remove heat from the evaporators. The compressor, fan motor, and water pump are on.

**Harvest:** The refrigeration system and water system are operating to harvest the ice and rinse the reservoir. The compressor is on for the full cycle, the pump is on until the purge valve closes.

The inlet water valve opens and refills the reservoir. The vapor and condenser by-pass valves are open during the entire harvest cycle, as is the harvest assist mechanism.

# **Eh222 E and Condensing Unit**

## **Remote Low Side Cuber User Manual**

### **Initial Start Up**

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#### Pre Start

A soak-out period of four hours is optional for this system. If desired, powering the compressor unit for four hours prior to start up allows the crankcase heater to warm up the oil in the compressor.

#### Start Up

1. Connect power to the condensing unit and move its toggle switch to Run or On.
2. Open the water supply valve.
3. Switch on the electrical power to the EH222. Observe that some of the lower control's indicator lights glow and its display shows *D*.
4. Locate lower light and control panel.
5. Push and release the ON button on the lower panel. The code display will begin to blink *F*.

The purge valve opens, the water pump starts and the inlet water valve opens to add water to the reservoir. In a few seconds the purge valve closes and the water pump stops. Water will flow into the machine until the reservoir is full. The vapor valve and harvest assist device will activate, then the compressor and water pump will start. *F* will be on steady.

---

Note: Because the condensing unit is external to the ice making section, no visible signs of operation will be noticeable until the water begins to cool and frost forms on the evaporator tubing.

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6. Go to the condensing unit and confirm that the compressor and fan motor are operating. Warm air will be discharged from the condenser.

Observe the Ready for Harvest indicator light. It may blink early in the cycle, that is normal. The control will ignore that signal for the first 6 minutes of freeze.

During the Freeze cycle move the curtain and observe that either the SW1 or SW2 light on the control board blinks On when the curtain moves away from the evaporator and Off when returned to its normal position.

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Note: Moving the curtain during the Freeze cycle has no affect on control function, but will cause water to flow into the cube chute.

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When enough ice has frozen, the Ready for Harvest indicator light will be on steady. After it's been on steady for a few seconds Harvest will begin.

The display shows an *H*. The vapor valve in the EH222 opens, and the harvest assist mechanism activates. In the CU the condenser bypass valve opens and the receiver inlet valve closes. In the EH222, the purge valve opens to drain some water, when it does the inlet water valve opens to refill the reservoir. After a few seconds the purge valve closes but the inlet water valve continues to fill the reservoir. Harvest continues until the ice is released as a unit and forces the curtain to open.

When the curtain opens it signals the controller that harvest is complete, and it returns the unit to a freeze cycle.

7. Check the ice harvested for proper bridge thickness. The ice bridge is factory set at 1/8 inch. If needed, adjust bridge thickness. Do NOT make it too thin.
8. Instruct the user in the operation of the machine and its maintenance requirements.
9. Fill out and mail the warranty registration form or register it on line at [www.scotsman-ice.com](http://www.scotsman-ice.com).

# EH222 E and Condensing Unit

## Remote Low Side Cuber User Manual

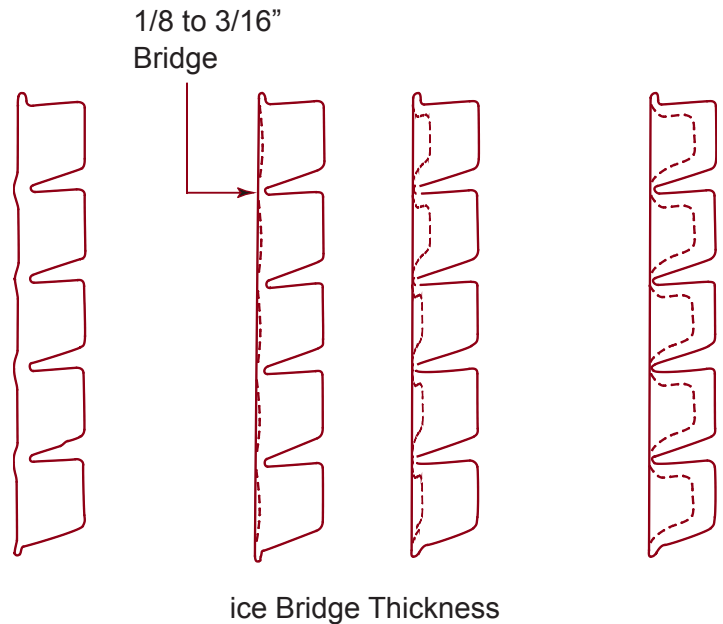
### Ice Thickness and Water Purge Adjustment

#### Bridge Thickness - For the Service Tech Only

1. Push and hold Off till the machine stops.
2. Remove evaporator cover.
3. Remove curtain.
4. Use a hex wrench and rotate the bridge thickness adjustment screw in 1/16 turn increments CW to increase bridge thickness.
5. Rotate CCW to decrease bridge thickness.

Caution: Do not make the bridge too thin or the machine will not harvest properly. Bridge thickness adjustments are not covered by warranty.

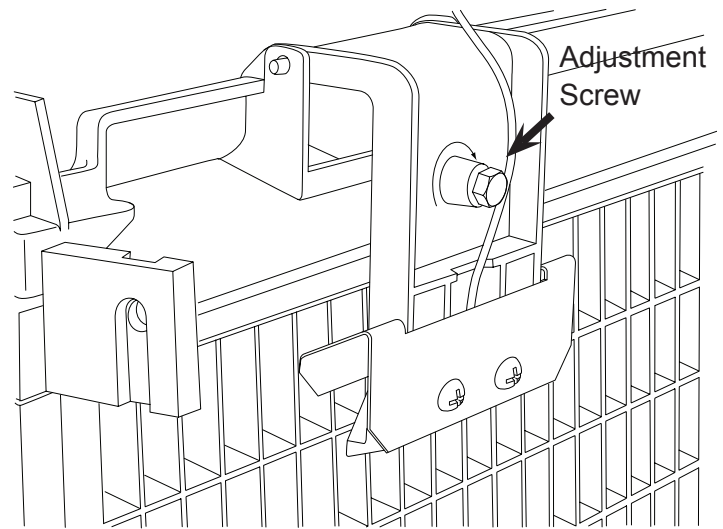
6. Return curtain and evaporator cover to their normal positions.
7. Push and release the On button. Check next harvest of ice. Repeat steps 1-6 if needed.



#### Water Purge Setting

The water purge is factory set to the automatic position, suitable for most water conditions. The setting can be changed to one of 5 manual settings or left on automatic.

Setting	Water Type
1	Minimum - RO water or equivalent
2	Moderate - Low TDS, non RO
3	Standard - Use with typical water
4	Heavy - High TDS
5	Maximum - Very high TDS
A	Automatic - Factory setting



Bridge Thickness Adjustment Mechanism

To set:

1. Switch the machine OFF by holding the Off button in until a number or the letter A shows on the display.
2. Press and release the On button repeatedly until the number on the display corresponds to the desired setting.
3. Press and release the Off switch again to return to the normal control state.

# Eh222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Adjustable Ice Level Control

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There is an adjustment post and an additional indicator light to the right of the four indicator lights. The ultrasonic ice level control allows the user to control the point that the ice machine will stop making ice before the bin or dispenser is full. Reasons for this include:

- Seasonal changes in ice used
- Planning to sanitize the bin
- Certain dispenser applications where maximum ice level is not desired

#### Use of control

There are several positions the ice level can be set to, including Off (knob and label indicators lined up), where it fills the bin until the standard bin control shuts the machine off.



Rotate the adjustment post to the desired ice level.

The machine will fill up to that level and when it shuts off the indicator light next to the adjustment post will be On.

Suggested Adjustment Knob Position for use with the ABS or Freestyle: first CW position - as shown above.

### **DO NOT ADJUST TOO LOW OR THE MACHINE WILL STOP MAKING ICE**

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Note: Ice will build up in the bin or dispenser at an angle, the distance set will be from the sensor to the top of the ice. The sensor position is shown in the cabinet layout diagrams.

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The actual distance between the highest point of the ice may be closer or further away than the distance set, depending upon the angle of the ice.

#### Ice

The cuber drops ice in large sections. That ice will break up into random parts as it falls into the bin, but some large sections may remain on top of the ice in the bin. In a dispenser this ice will break up into mostly individual cubes as the dispense mechanism moves the ice.

#### Noise

The ice machine will make little noise when it is in ice making mode. The compressor and fan motor are remote from the ice making head. The water pump in the ice making head will produce some sound. It is also normal to hear some cracking just before the harvest cycle begins. In addition, during the harvest cycle the harvest assist solenoid will click twice as it pushes the ice out and returns to its normal position. The ice harvests as a unit or slab, which makes some noise when it impacts the bin or dispenser. These noises are all normal for this machine.



# Eh222 E and Condensing Unit

## Remote Low Side Cuber User Manual

### Cleaning, Sanitation and Maintenance

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This ice system requires three types of maintenance:

- Remove the build up of mineral scale from the ice machine's water system and sensors.

- Sanitize the ice machine's water system and the ice storage bin or dispenser.
- Clean the remote air cooled condenser.

It is the User's responsibility to keep the ice machine and ice storage bin in a sanitary condition. Without human intervention, sanitation will not be maintained. Ice machines also require occasional cleaning of their water systems with a specifically designed chemical. This chemical dissolves mineral build up that forms during the ice making process.

Sanitize the ice storage bin as frequently as local health codes require, and every time the ice machine is cleaned and sanitized.

The ice machine's water system should be cleaned and sanitized a minimum of twice per year.



1. Remove the front panel.
2. Remove the evaporator cover.
3. Remove all ice from the storage bin or dispenser.
4. Push and release the Clean button. The yellow Clean light will blink and the display will show  $\epsilon$ . The machine will harvest any ice, drain the reservoir and begin to refill it.

---

Note: Curtain must be in the closed position. Move curtain to release any ice trapped after ice is harvested.

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5. Observe code display, when it blinks the characters "A d 1" immediately go to the next step.

 <b>CAUTION</b>	Ice machine scale remover contains acids. Acids can cause burns.
	If concentrated cleaner comes in contact with skin, flush with water. If swallowed, do NOT induce vomiting. Give large amounts of water or milk. Call Physician immediately. Keep out of the reach of children.

6. Pour 8 ounces of Scotsman Clear 1 ice machine scale remover into the reservoir. The unit will circulate the scale remover, then drain and flush it. This will take 35 minutes, then the machine will stop and the display will show  $\delta$ .

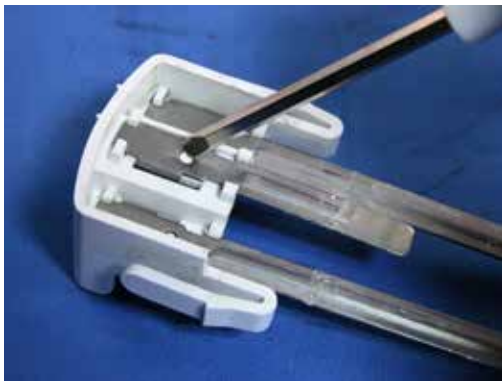
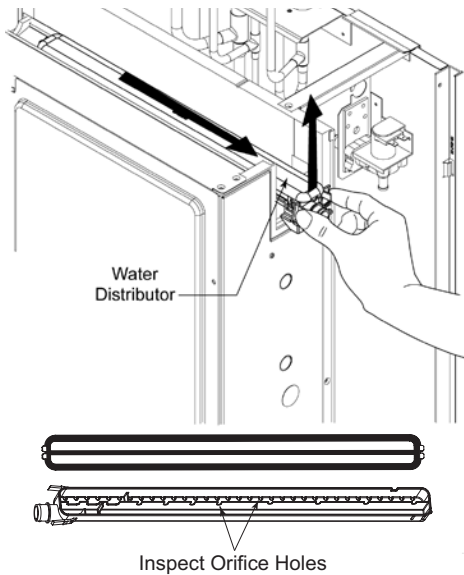
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Note: If unit has not been de-scaled for an extended period of time and significant mineral scale remains, repeat steps 5 - 10.

---

7. Mix a cleaning solution of 1 oz of ice machine cleaner to 12 ounces of water.
8. Remove curtain from unit.
9. Locate ice thickness sensor. Squeeze mounting legs together to release sensor.
10. Remove water distributor from ice machine by disconnecting its hose, squeezing the retaining snaps together and pushing the distributor to the right as far as possible. Lift up to remove. Inspect distributor for restricted orifice holes. Be sure all holes are full open.
11. Locate water level sensor. Squeeze catches together and pull up to remove sensor. Separate probes from housing and wash all surfaces with ice machine scale remover solution. Return probes to holder.
12. Wash the metal surfaces of the ice thickness sensor and the adjustment screw with ice machine cleaner solution. Also wash the water distributor, water level sensor probes and curtain with the ice machine cleaner solution.
13. Create a solution of sanitizer by mixing a 1 gallon or 4 liter solution of locally approved sanitizer and clean, warm water. Use an EPA approved food equipment sanitizer at the solution mix recommended by the sanitizer manufacturer. Scotsman offers Stera Sheen Green Label sanitizer, part number 14-0382-01.

## Eh222 E and Condensing Unit Remote Low Side Cuber User Manual



Step 15.  
Release probes by pushing in on white buttons and pulling probe down out of holder.

14. Thoroughly wash all surfaces of the ice thickness sensor, water level sensor, curtain and water distributor with the sanitizer solution.
15. Wash all interior surfaces of the freezing compartment, including evaporator cover and right side panel liner with the sanitizer solution.
16. Return water level sensor, ice thickness sensor, water distributor and curtain to their normal positions. Be sure water level sensor and ice thickness sensor are completely dry.
17. Push and release the Clean button. The yellow Clean light will blink and the display will show  $\epsilon$ . The machine will go through a harvest cycle, drain the reservoir and begin to refill it.
18. Observe code display, when it blinks the characters "Ad" immediately go to the next step.
19. Pour the sanitizing solution into the reservoir until it is full. The unit will circulate the sanitizer, then drain and flush it. This will take 35 minutes, then

the machine will stop and the display will show  $\epsilon$ .

20. Return all panels and covers removed to their original positions.
21. Push and release the On button to resume ice making.

### Other Maintenance

The remote air cooled condenser coil must be cleaned occasionally to keep the system operating at high efficiency.

Remove any large debris from the outside of the coil.

Vacuum accumulated dust.

Wash out the coils with water.

Caution: Do NOT use excessive water pressure as that will bend the fins.

If the coils have become coated with grease, a coil cleaner will have to be used to wash the coils.

Disconnect power to the condensing unit and remove the condenser top.

Inspect the fan blade to be sure it is not cracked and is clean.

Return the condenser top to its original position and reconnect the power supply.

**Eh222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
Operational Characteristics 800 lb system**

Cycle Times @ Condenser Temp/Cabinet Temp/Water Temp in degrees F.

	-20/50/40	70/70/50	90/90/70	120/110/100
Freeze	9 to 10 minutes	10 to 12 minutes	13 to 15 minutes	19 to 21 minutes
Harvest	2 to 3 minutes	1 to 1.5 minutes	1 to 1.5 minutes	.5 to 1 minute

System Pressures @ Condenser Temp/Cabinet Temp/Water Temp in degrees F

	-20/50/40	70/70/50	90/90/70	120/110/100
Suction at head, end of Freeze	26 to 27 PSIG	26 to 31 PSIG	26 to 31 PSIG	30 to 35 PSIG
Suction at head, Harvest - Peak	88 PSIG	85 to 105 PSIG	105 to 125 PSIG	140 to 160 PSIG
Discharge at Condensing Unit: Freeze - 5 minutes in	217 PSIG	230 to 250 PSIG	250 to 270 PSIG	330 to 350 PSIG

**Operational Characteristics 1000 lb system**

Cycle Times @ Condenser Temp/Cabinet Temp/Water Temp in degrees F.

	20/70/40	70/70/50	90/90/70	120/110/100
Freeze	7 to 8 minutes	8 to 9 minutes	10 to 11 minutes	16 to 18 minutes
Harvest	2 to 3 minutes	1 to 1.5 minutes	1 to 1.5 minutes	.5 to 1 minute

System Pressures @ Condenser Temp/Cabinet Temp/Water Temp in degrees F

	-20/50/40	70/70/50	90/90/70	120/110/100
Suction at head, end of Freeze	22 PSIG	26 to 31 PSIG	27 to 32 PSIG	30 to 35 PSIG
Suction at head, Harvest - Peak	88 PSIG	85 to 105 PSIG	90 to 110 PSIG	140 to 160 PSIG
Discharge at Condensing Unit: Freeze - 5 minutes in	219 PSIG	230 to 250 PSIG	240 to 250 PSIG	345 to 380 PSIG

Below information applies to both size systems:

Headmaster maintains a minimum discharge pressure during freeze of 217 PSIG + 25, -15 PSIG.

CPR Valve Setting: 55 - 60 PSIG.

Note: CPR allows a maximum low side pressure at the compressor. Maximum only occurs during harvest.

**Refrigerant Charge**

- 800: 192 oz.
- 1000: 248 oz

**Compressor Amps, 800 model**

- Single Phase - 6 to 8 Three Phase - 5 to 7

**Compressor Amps, 1000 model**

- Single Phase - 8 to 9, Three Phase - 6.3 to 5.2

**Batch Weight: 8 lb**

**Discharge Pressure Cut Out Switch**

- Cuts Out at: 450 PSIG Resets at: 350 PSIG



# **EH222 E and Condensing Unit Remote Low Side Cuber User Manual**

## **What to do before calling for service:**

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Reasons the machine might shut itself off:

- Lack of water.
- Freeze cycle takes too long.
- Harvest cycle takes too long.
- High discharge pressure.
- Ice level control set wrong

Check the following:

1. Has the water supply to the ice machine or building been shut off? If yes, the ice machine will automatically restart within 25 minutes after water begins to flow to it.
2. Has power been shut off to the ice machine? If yes, the ice machine will automatically restart when power is restored.
3. Is the curtain open because some ice is stuck under it? If so, remove the ice and the machine should start in a few minutes.
4. Check the adjustment knob of the ice level control. See page 21.

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Note: Curtain can be removed & replaced anytime the machine is in a standby mode or when it is in a freeze cycle. However, removal of the curtain during freeze will result in water flowing into the bin. Removal of the curtain during harvest terminates harvest at that point and, if left off, will result in the machine shutting off.

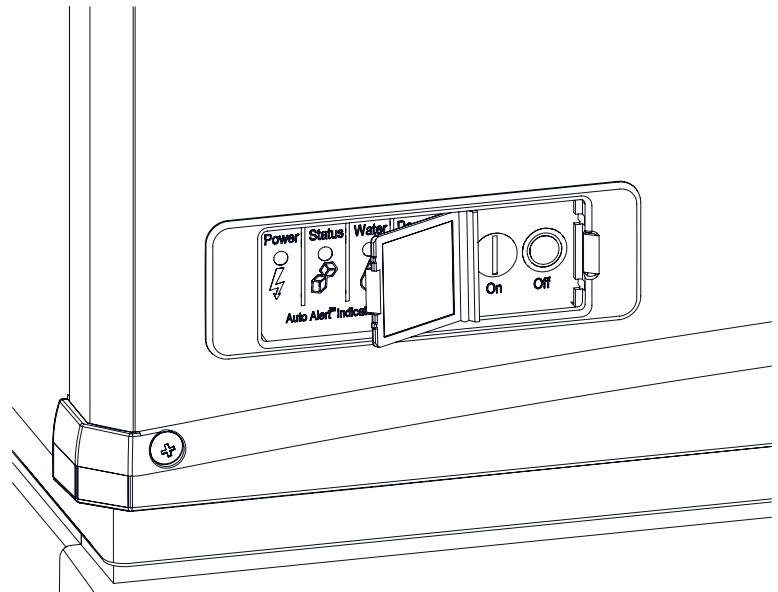
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### **To Manually Reset the machine.**

1. Open the switch door.
2. Push and release the Off button.
3. Push and release the On button.

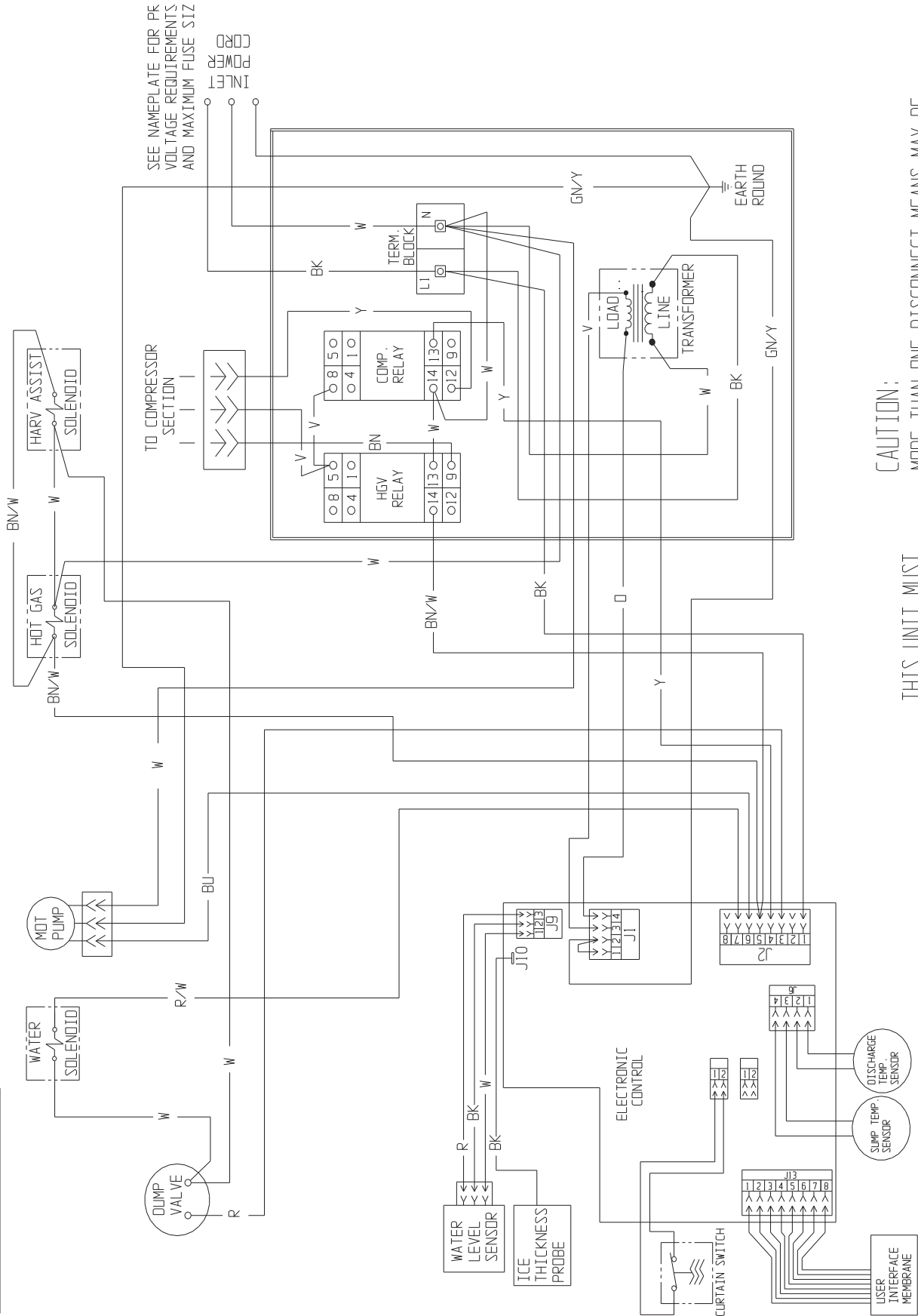
To Shut the Machine Off:

1. Push and hold the Off button for 3 seconds or until the machine stops.



**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
EH222 Schematic Diagram**

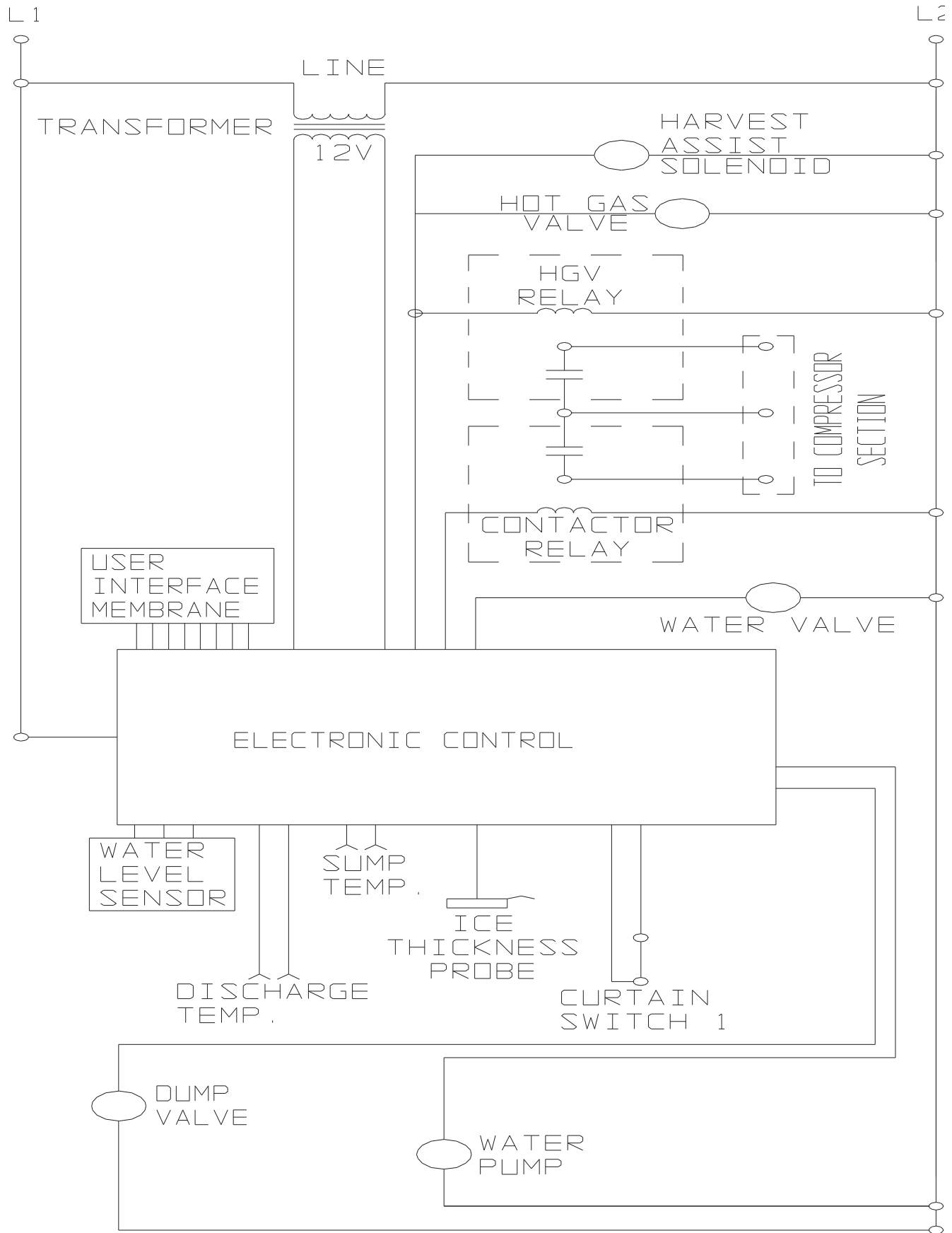
17-3537-01



**CAUTION:**  
MORE THAN ONE DISCONNECT MEANS MAY BE  
REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.

THIS UNIT MUST  
BE GROUNDED.

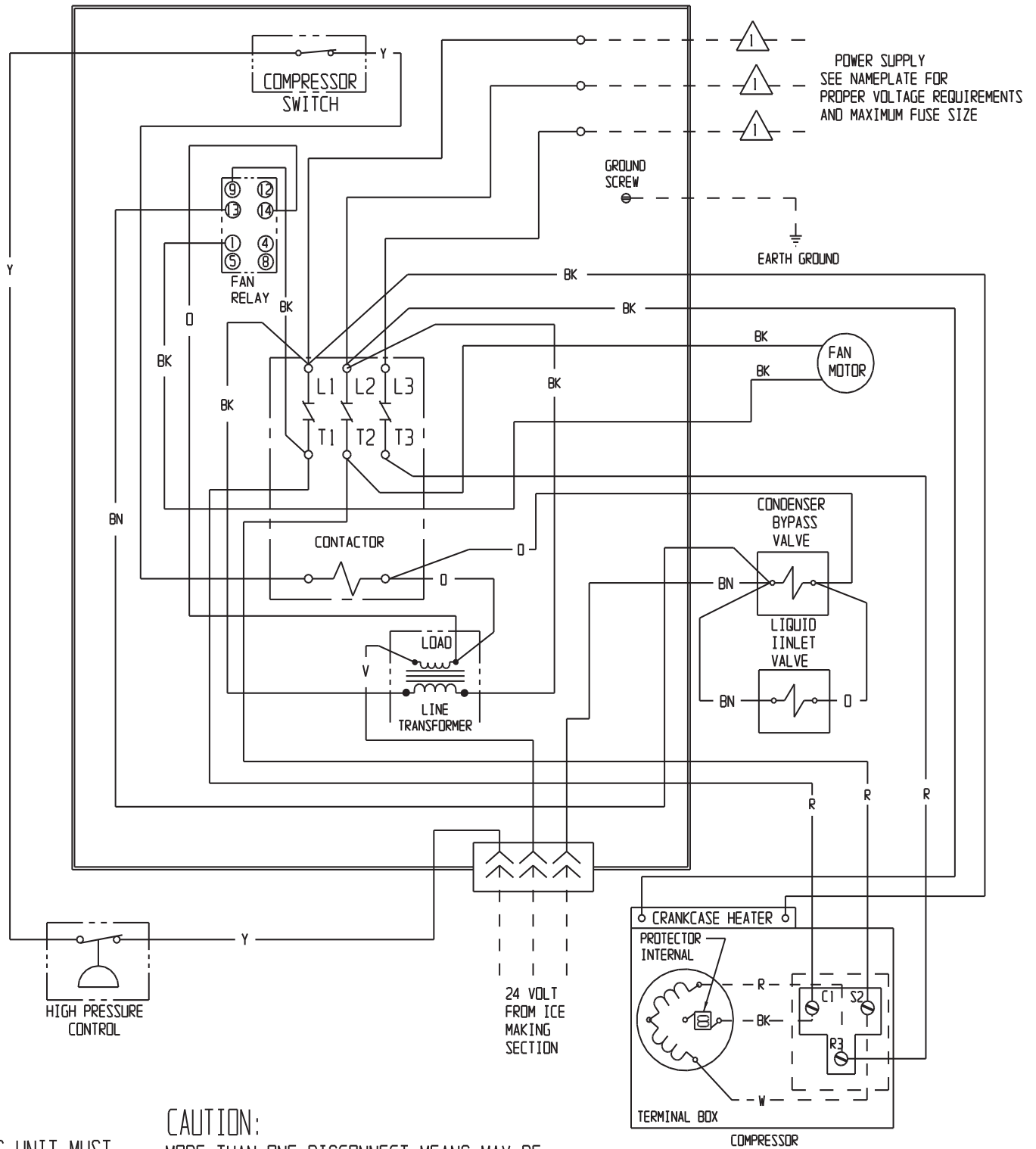
**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
EH222 Wiring Diagram**



**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
ECC Three Phase Schematic Diagram**

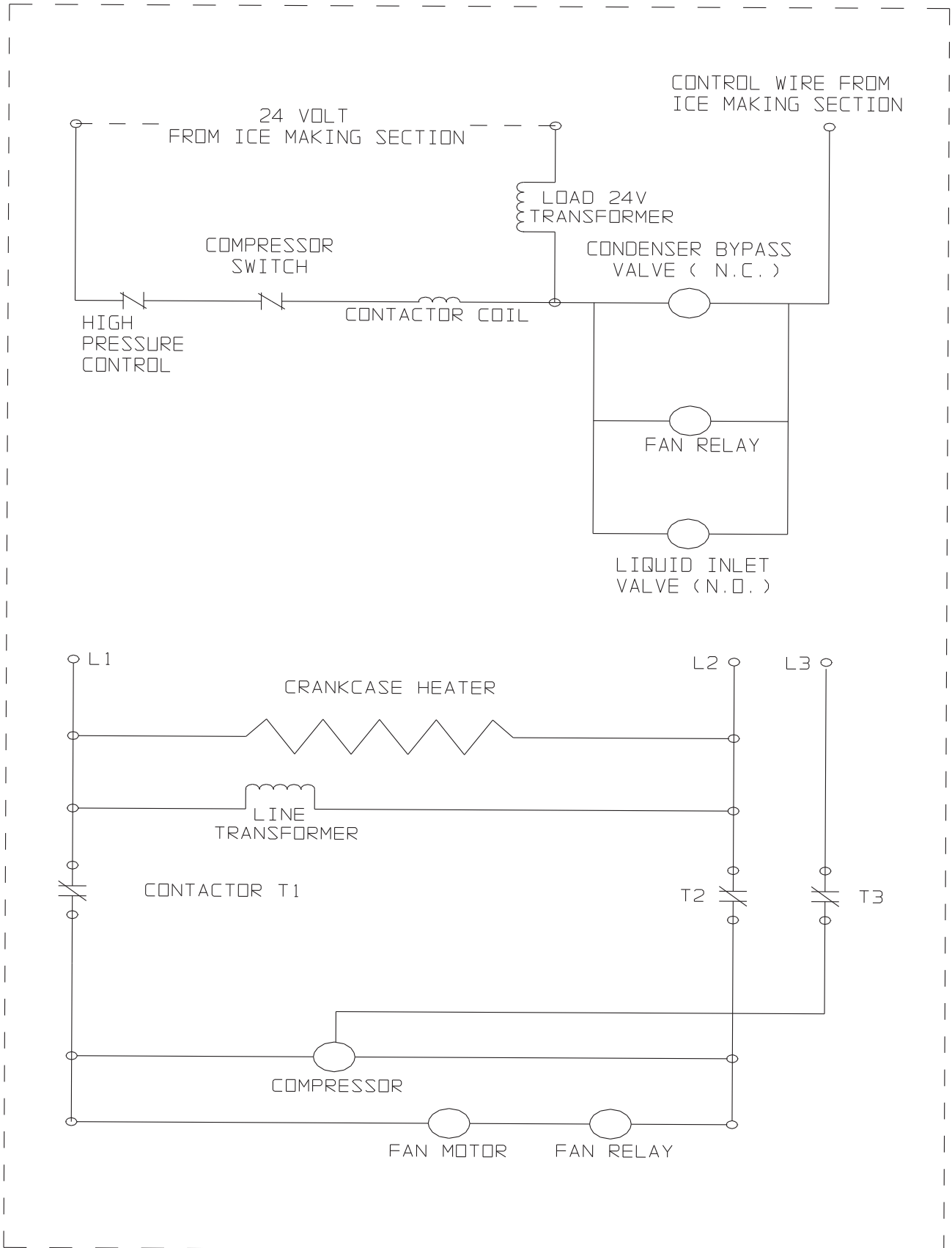
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THIS UNIT MUST BE GROUNDED.  
CAUTION:  
MORE THAN ONE DISCONNECT MEANS MAY BE REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.

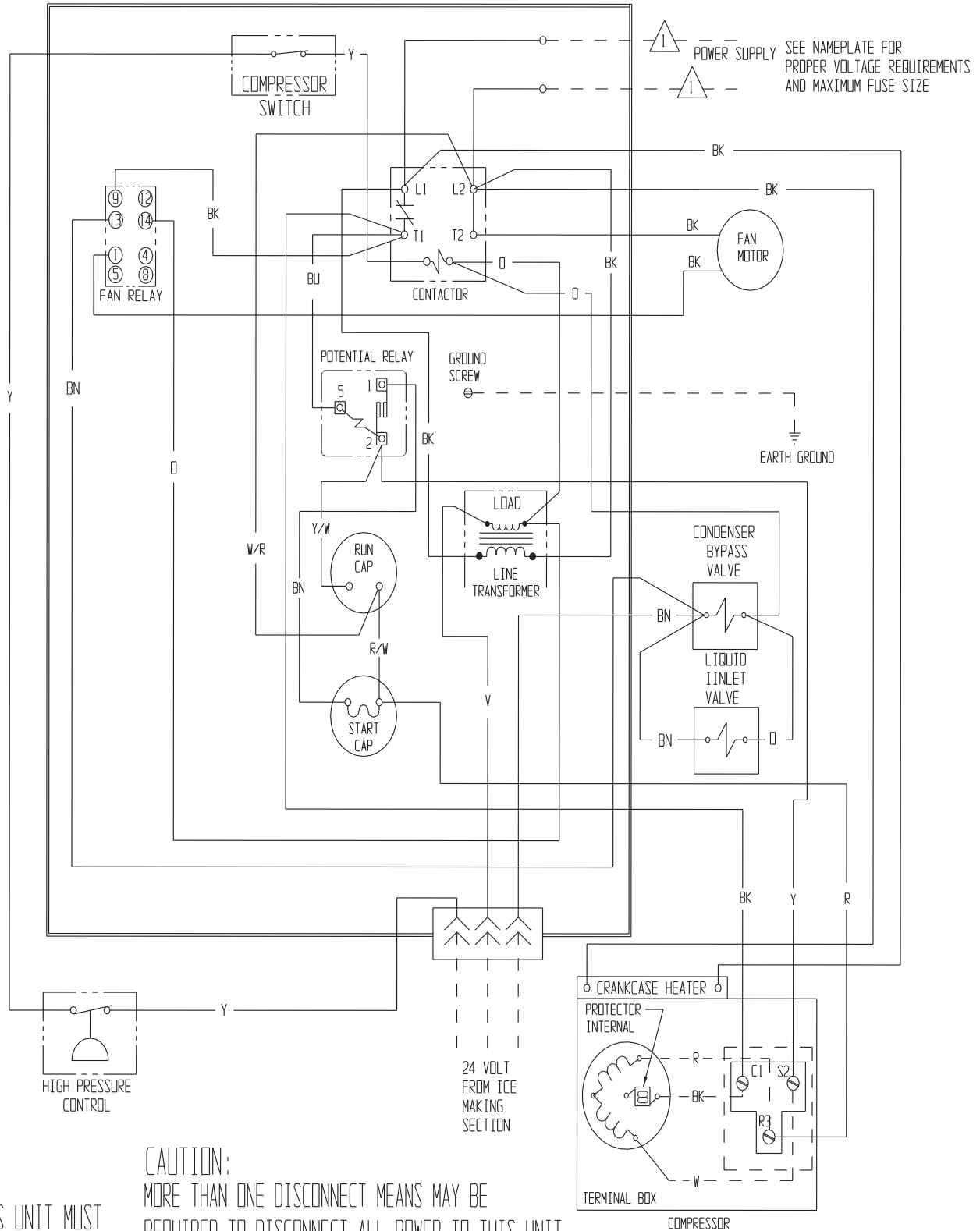
**EH222 E and Condensing Unit  
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ECC Three Phase Wiring Diagram**



**EH222 E and Condensing Unit  
Remote Low Side Cuber User Manual  
ECC Single Phase Schematic Diagram**

17-3653-01

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THIS UNIT MUST BE GROUNDED.

CAUTION:  
MORE THAN ONE DISCONNECT MEANS MAY BE  
REQUIRED TO DISCONNECT ALL POWER TO THIS UNIT.



# **SCOTSMAN ICE SYSTEMS**

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