

Eskimo Ice 600

Installation/Owners Manual



Self Contained Ice Making System
Revised: 5-5-06
L-2448A

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Installation Instructions for E.I. 600

Read all instructions before starting the installation

Locating ice machine

Locate flat level platform for E.I.600. Do not place where salt spray is present or corrosion problems will result. Locate so that electrical control panel (with off/on switch) faces out for easy access. Test routing of 1 1/4" ID delivery hose (delivery elbow on unit will swivel to face different directions). Check routing of 1/2" I.D. raw water hose which connects to hose barb facing downward at top rear of ice machine (marked "water inlet"). Check 5/8" I.D. hose for raw water discharge which connects to hose barb on top of unit (marked "water outlet"). Check 1/4" I.D. fresh water hose which connects to 1/4" male flare fitting on back of machine. Check access to high and low refrigerant schrader valves on top right and front right of ice machine.

If routing of all hoses is clear, fasten unit down with four 1/4" lag bolts or 1/4" bolts and nuts.

Routing ice delivery hose

Route the hose so that it travels up hill until it reaches the ice storage box. Route with as few bends as possible and no sharp or 180 degree bends. Total length should be less than 30 feet. If hose runs uphill and down with only one high spot, this will be OK. However, the hose should not have low spots which would trap water. (See Drawing #1.) Do not bend hose with bend radius of less than 12". Route hose into side of the ice storage box so that it is as high as possible, and centered on side of box. This is done to maximize the amount of ice that can be piled up before it reaches the sensor and delivery hose. Note that the ice does not level itself and will form a broad pile as it falls out of the hose. It is desirable to have the ice storage box as deep (tall) as possible for maximum delivery of ice.

It is not necessary to cover the delivery hose with insulation, but insulation is recommended in order to reduce sweating of hose from condensation. The hose can be covered before installing, after, or during installation. The insulation provided has a pre-glued seam. After placing the insulation around hose pull off the two Mylar release liners and then press the two edges together. The disadvantage of installing the insulation before installing the hose is that care must be taken not to tear up insulation while working the hose into position. Since the pre-glued seam may soften and come apart with heat and time, it is recommended that the seam and end joints be covered with white duct tape. Strap hose securely, keeping mind that it will be heavier when filled with ice. Be careful not to crush or kink the hose because any restriction will prevent free flow of ice.

IMPORTANT NOTE: Think of ice moving through the hose as a semi-solid that will not push past any restrictions placed inside of the hose. Example of installations that will not work: ice hose can not be pushed over a pipe or over a thru-hull fitting. Do not use hose other than factory ice hose.

Ice delivery hose installation detail

We are using a thru-hull fitting for delivery of ice into storage box. Drill hole for thru-hull fitting in storage box. Make this hole 2 3/8" in diameter. (See drawing #6.) Also see yellow template in temperature control box. (See drawings #4, 5 and 9 also). Install thru-hull fitting in this hole from inside the box. If thru-hull will need to be removed in order to lift out the box, do not install with caulking. Otherwise caulk in the fitting. (See drawing #9 for optional attachment of ice hose to fish boxes which will be lifted out.) Slide ice hose into the thru-hull up to internal shoulder and lightly tighten hose clamp on outside of fitting to secure the ice hose. Over tightening of clamp will cause later collapse of the hose. **ON ALL MACHINES MANUFACTURED OR FACTORY REPAIRED AFTER 6/1/01 THE EXTERNAL VENT HOLE IS NOT NEEDED.** On these new machines the following steps are not needed. After ice delivery hose is completely installed, locate highest point of hose within ten feet of ice machine. Cut out a one square inch of insulation on top of hose. Drill a 1/8" hole in ice delivery hose, drill only through top of hose in center of removed insulation area. This hole must be located before the first low spot in the hose. (Example if first low spot in hose is at two feet then the hole must be in the first foot.) Under some circumstances a slight amount of water may come out this hole. Do not locate this vent hole over any equipment that may be damaged by dripping water. If stainless spout is turned downward and ice hose is routed out the side of the frame rather than in an upward direction it will be necessary to locate a vent hole at the top of the stainless spout near where it meets the fastening plate. See drawing #7.

Raw water pump plumbing hook up

Pick up water from 1/2" or larger sea cock, run through sea strainer, and then run to pump. Pump must be located below water line since it is not self priming. Run hose uphill from sea cock to pump and uphill from pump to ice machine. If the hoses are run correctly all the water will drain out of the hoses when the boat is hauled out of the water. (See drawing #2) If hoses are not run correctly, continual problems with the pump becoming air locked will occur. When fastening 1/2" I. D. hose to raw water pump, slide hose directly over threaded discharge nipple and clamp. Do not thread fitting onto discharge nipple because it will cause the nipple on pump housing to break at the threads. See separate instruction sheet about installing and positioning raw water pump. Pay particular attention to locating with water outlet facing up.

Run 5/8" I.D. hose from discharge barb on unit to 1/2" or larger overboard thru-hull fitting.

Main power electrical hook up

Run 12/3 wire from 20 amp. circuit breaker to electric control box. Run wire into small grommeted hole in back of electric box. Attach power wires to lower screws of contactor. Use spade terminals under screws not .250 push on terminals (fasten hot lead to left screw on 115V models). Attach ground wire to green screw in lower back of electric box. (see drawing #3)

Raw water pump electrical hook up

The voltage for the raw water pump supplied with the Eskimo Ice machine should match the input voltage marked on the front I. D. label of the ice machine. All that is necessary to wire the pump is to

install the male plug to the pump wire (green wire to green screw, black to brass, and white to silver, 115V). (green to green, black and white to brass for 230V) Insert male plug on pump into female on the pigtail attached to the machine, if desired pigtail and plugs can be eliminated, and pump wires directly into electrical control box. Matching crimp terminals are provided for this purpose. They are located in the zip lock bag with the hose clamp.

Fresh water plumbing hook up

Tap into ship's fresh water line and add a shut off valve. Run 1/4" I.D. water hose from valve to 1/4" male flare fitting on back of machine (marked "fresh water inlet"). 90 degree fitting provided in bag with terminals and hose clamp.

Thermostat installation and wiring of the E.I. 600

Installation of temperature control

This ice machine uses a Ranco ETC control. We recommend mounting in an accessible location near the unit. Since this control has an LED indicator and switches which can be useful in monitoring and testing the ice machine, a convenient location is preferred. A clean dry location in the engine room is also acceptable, perhaps on a bulkhead near the ice machine. See trouble shooting item #8.

Installation of the sensor

Locate the sensor just below the ice delivery hose and slightly to the left or right, approximately one inch below the thru-hull and one inch off the center line. (This is to avoid having water and ice hitting sensor on the way into the box.) See drawings #4 and #5. Drill a 3/8" hole in storage box to pass sensor through. See full size yellow template in SP-32 box. Fasten sensor to inside of box with stainless steel cover provided. This will cover the whole, upper third of sensor and wires. Fasten cover down with two screws. If sensor will not have to be removed in lifting out storage box, it may be caulked in place. See drawings #4, 5, and 6.

Temperature control wiring

See wiring diagram G901001 included in this manual.

Wear prevention check

Check all metal tubing to see that there is no contact. Contact might cause excessive wear when machine is operating, thus causing a refrigerant leak. Tubes can be tapped to listen for contact. Pay particular attention to tubes from pressure controls in electrical box.

Corrosion control

Covering all electrical components and wiring connections with a corrosion product will help reduce corrosion problems years into the future. The complete ice machine can be coated with a spray like Corrosion Block.

Winterizing-warning

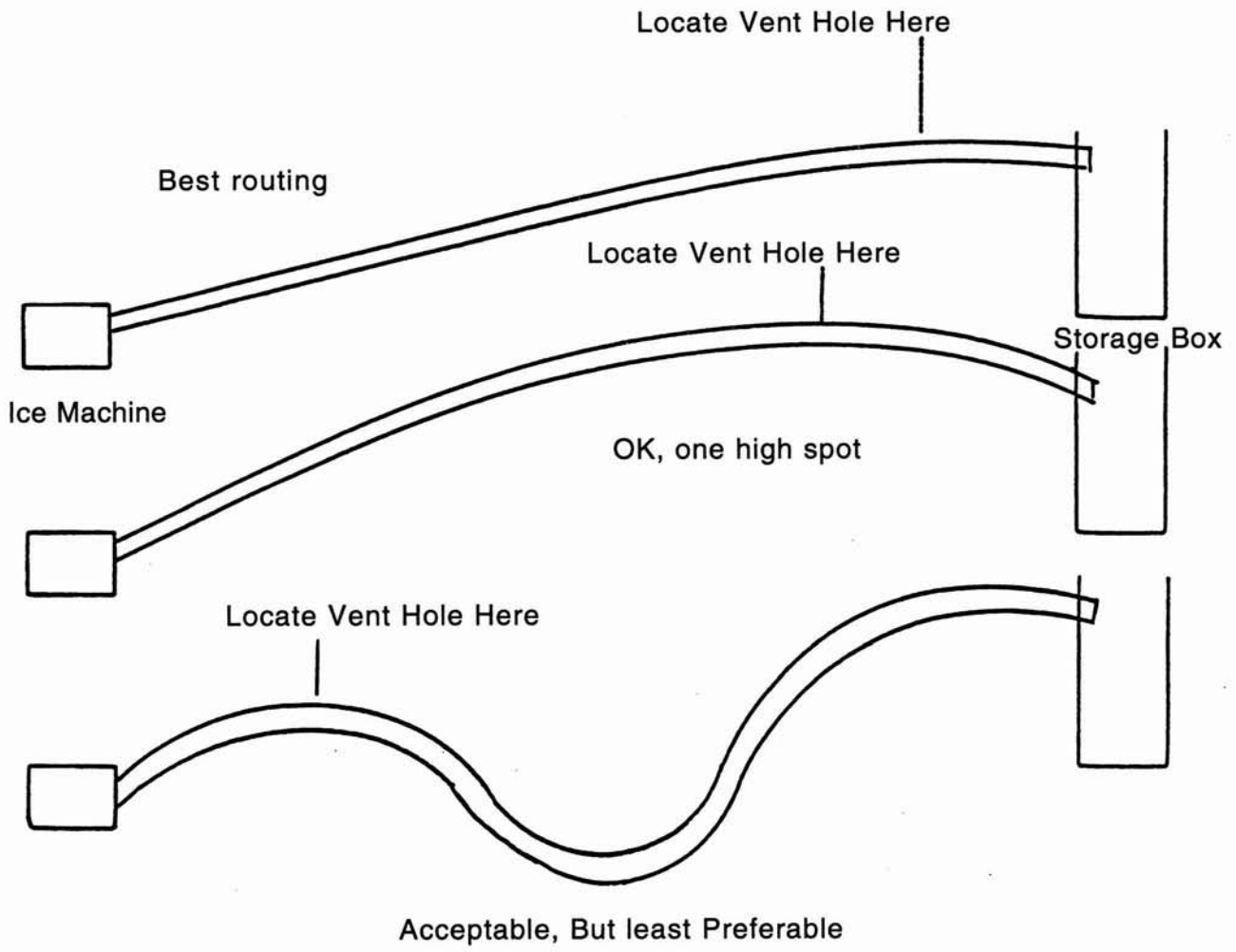
See note on below freezing temperatures in trouble shooting section #11.

Warranty card

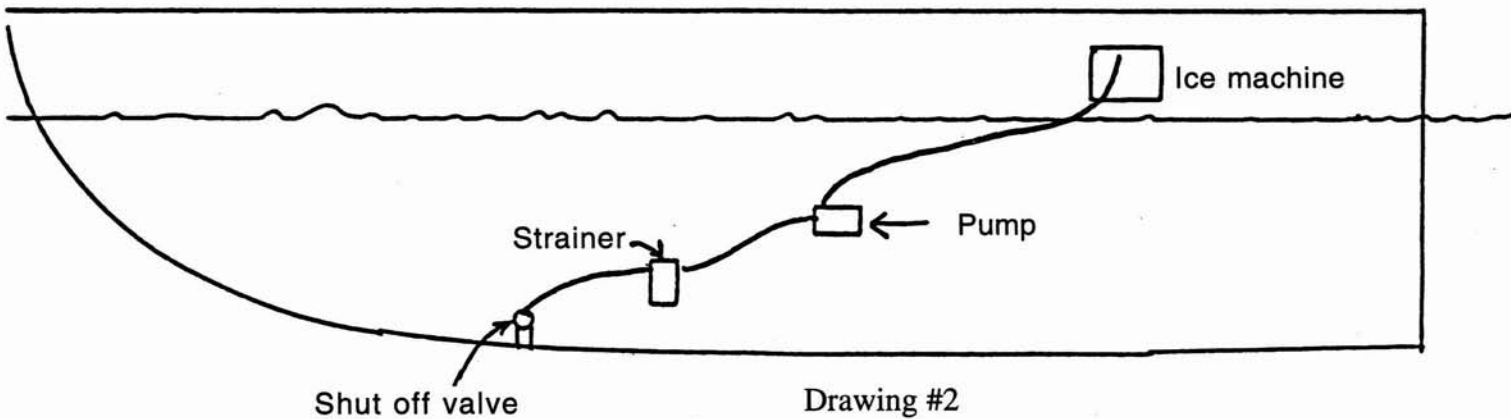
Please fill out upper portion of warranty card, affix stamp and mail back promptly. This is the responsibility of the installing company.

Revised: 4/26/94, 5/30/94, 7/22/94, 4/1/95, 7/5/95, 11/23/96,7/97,12/99,12/01,1/02,7/03

ON ALL MACHINES MANUFACTURED OR FACTORY REPAIRED AFTER 6/1/01 THE EXTERNAL VENT HOLE SHOWN ON DRAWINGS BELOW IS NOT NEEDED.

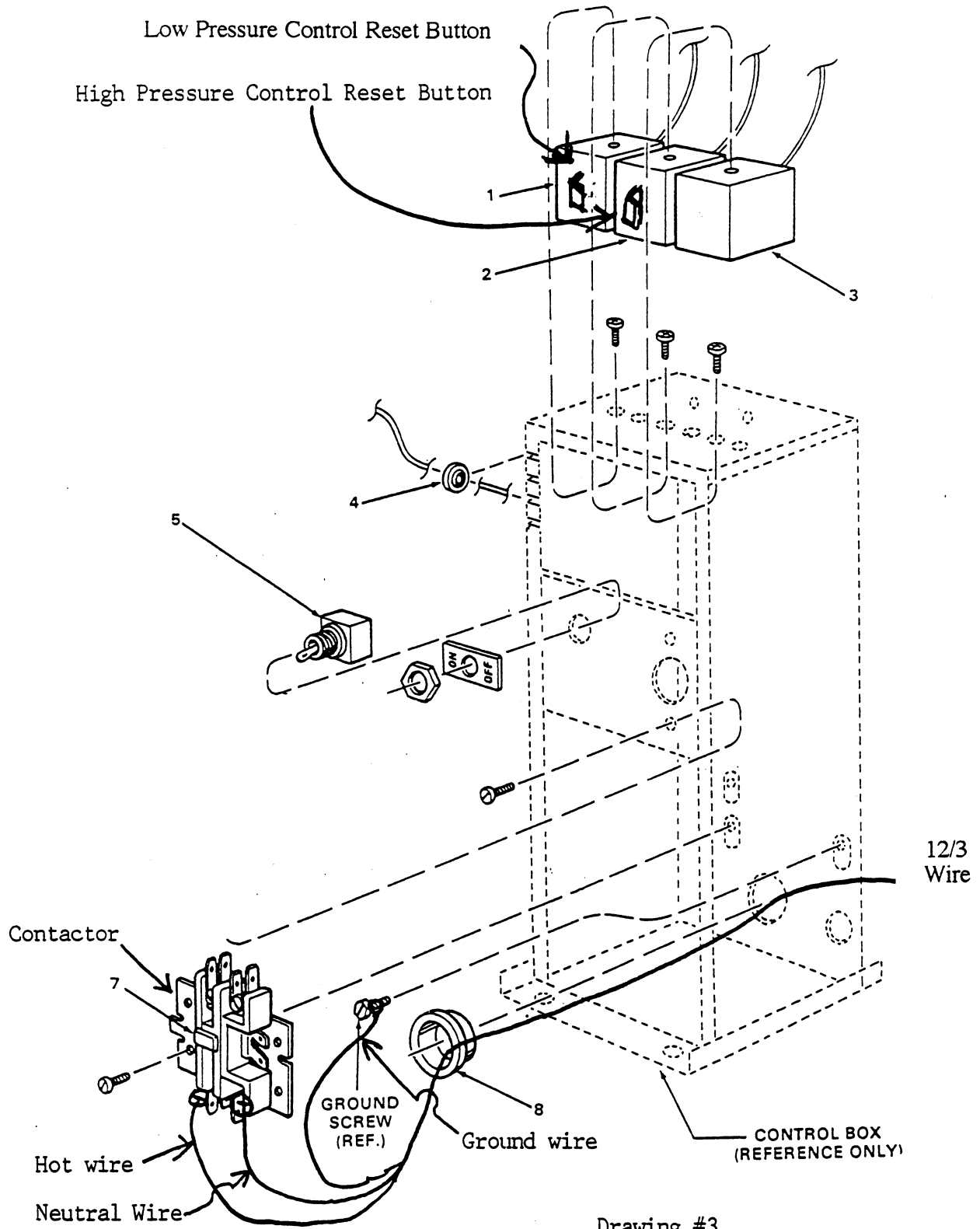


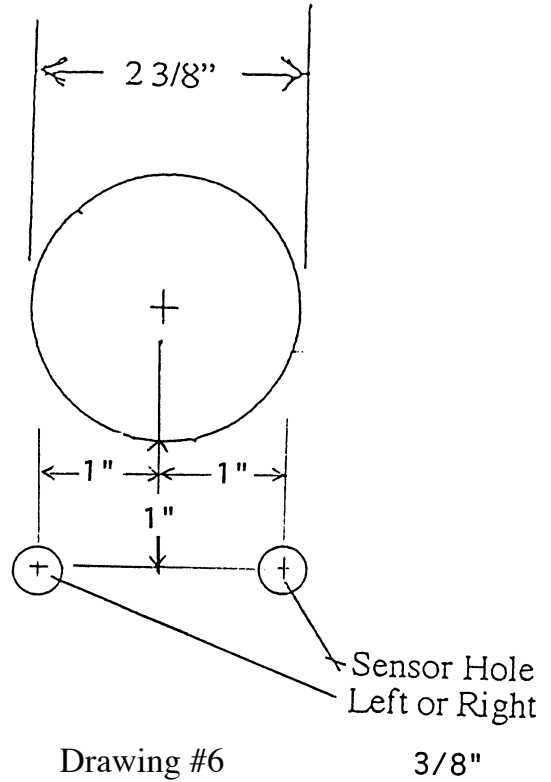
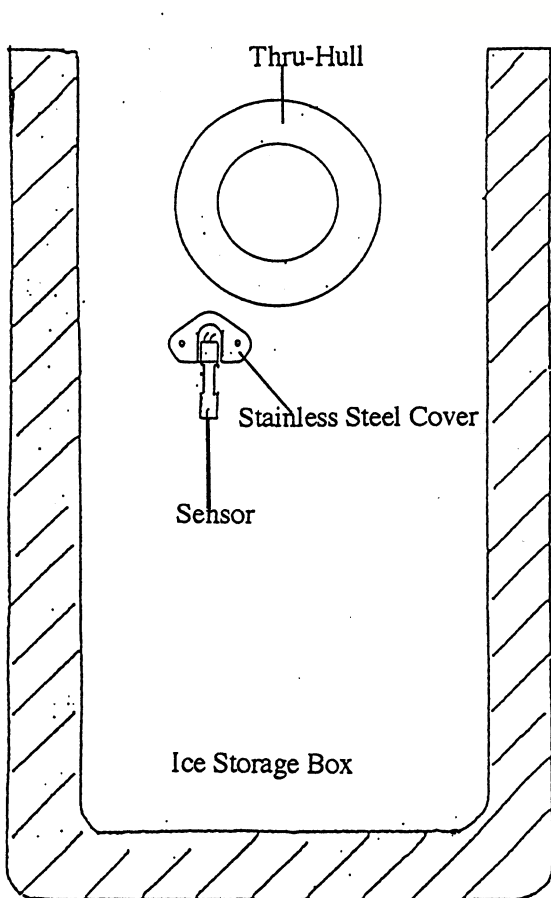
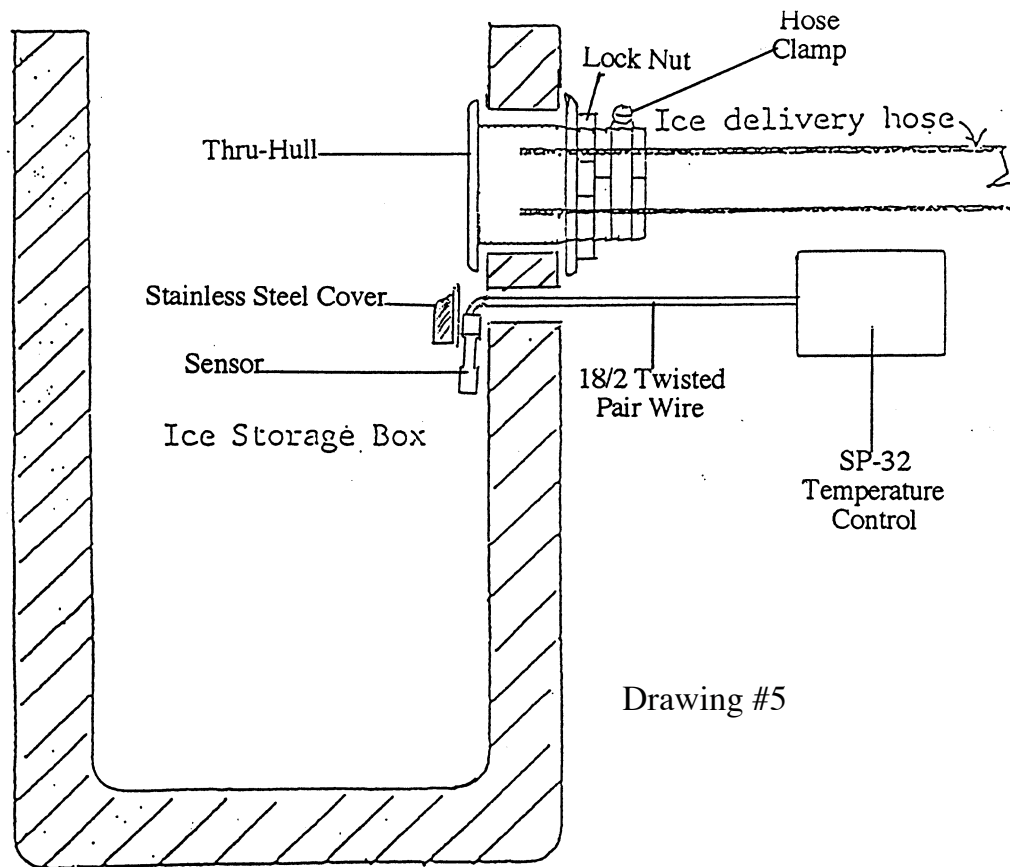
Drawing #1

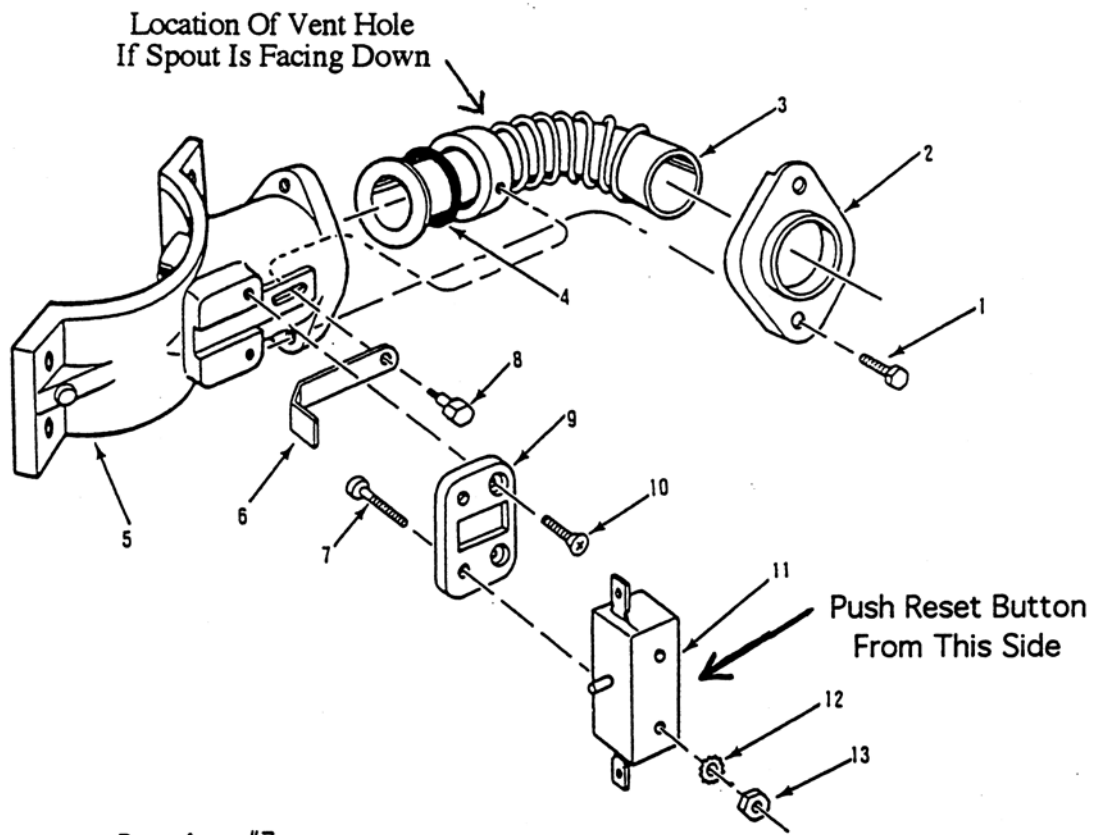


Drawing #2

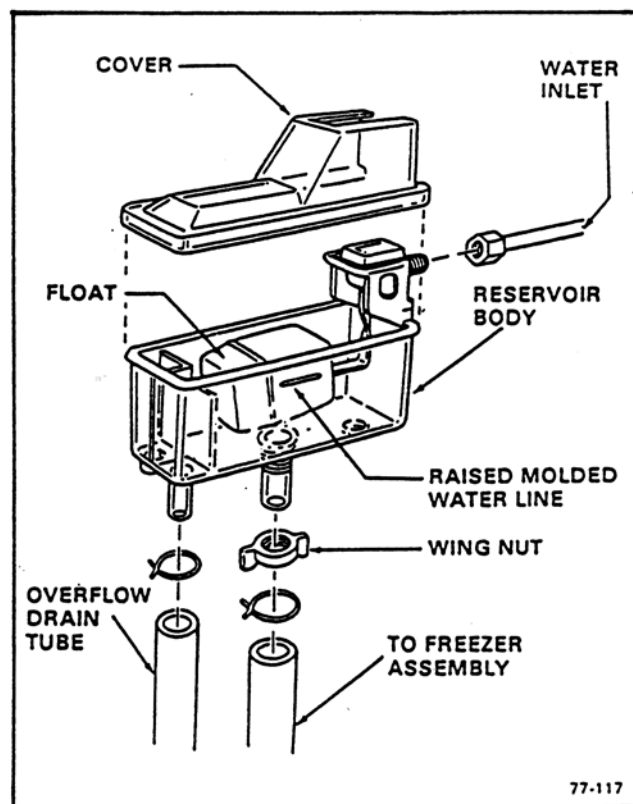
Low Pressure Control Reset Button
High Pressure Control Reset Button





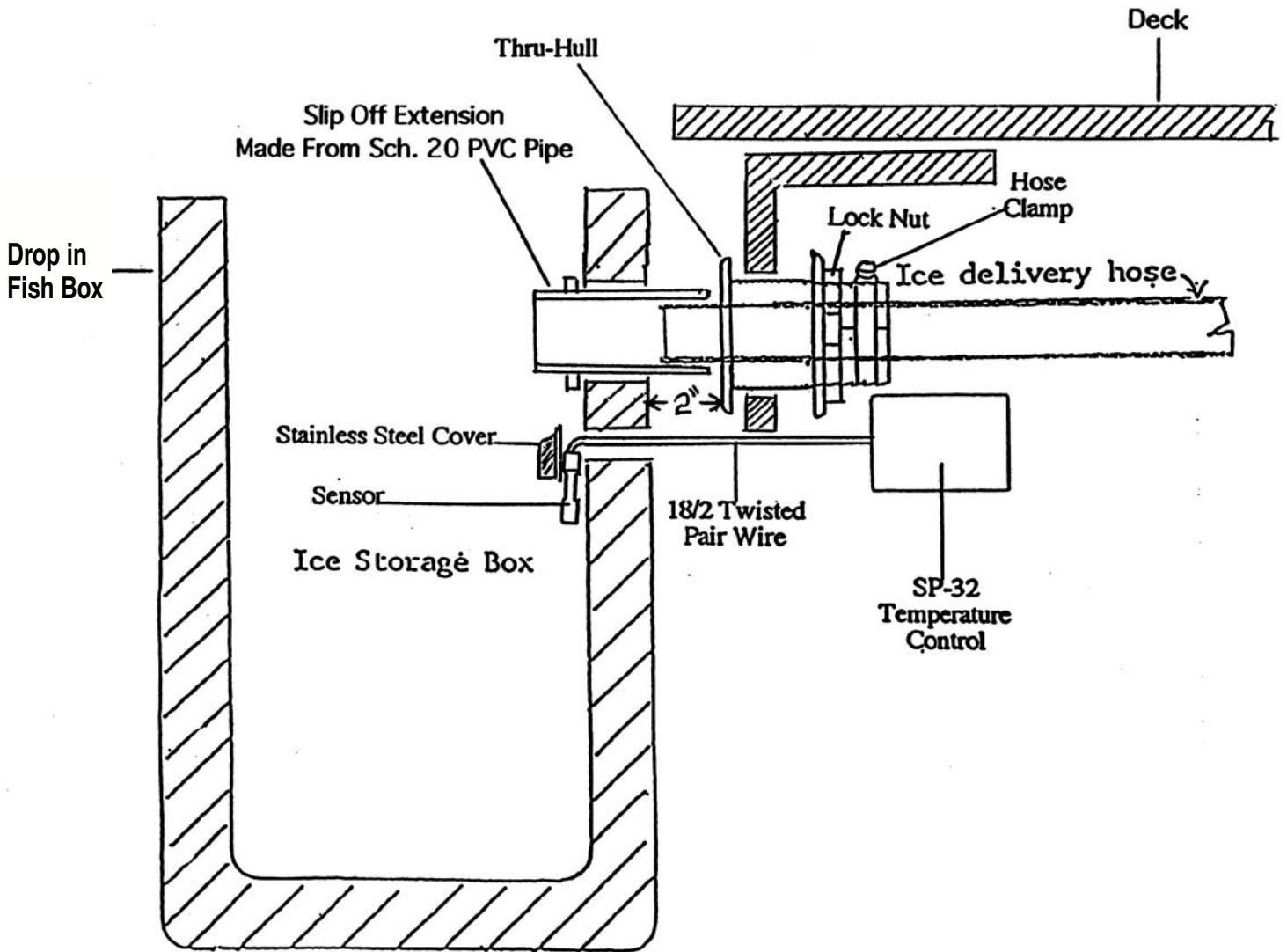


Drawing #7



Drawing #8

ICE HOSE TERMINATION FOR REMOVABLE FISH BOXES



Drawing #9

Eskimo Ice 600 - Start up procedure form

(check mark each box after completion of each step)

- 1. Record 9-digit Eskimo Ice Serial Number (on front of ice machine): _____
 - Place toggle switch on front of ice machine to "off" position (down)
 - Open freshwater shut off valve. Freshwater reservoir and evaporator (auger) should fill with water and reservoir float should rise and stop water flow when water level is equal in auger and reservoir.
- Open sea cock to raw water pump
- 2. Record complete hull number: _____
 - a. Boat name if applicable: _____
- 3. Turn on power from circuit breaker for ice machine.
- 4. Check to see red lights are lit on electronic ice level control unit.
- 5. Place toggle switch on ice machine to "on" position (up).
Drive motor and raw water pump should start immediately.
Compressor will start approximately one minute later.
Use this one minute delay to check for overboard raw water discharge.
- 6. Check for overboard raw water discharge.
Approximately three minutes after initial start up, the ice machine will begin to produce ice. Afterwards, it will take approximately 1 minute per foot of ice delivery hose to fill ice hose and reach ice storage box after a cold start up.
- 7. Check operation of ice box sensor. 10 minutes after ice drops into ice box, scoop an amount of ice and place against ice box sensor. Ice machine should cycle off within 5 minutes. Keep ice against sensor when checking next step.
- 8. Check right red light on electronic ice level control unit. It should be off.
Ice machine compressor should be off at this time, but the auger drive motor should run approximately 1 minute to clear ice from auger assembly. For further explanations on electronic ice level control unit, see trouble shooting item # 10.
- 9. Remove ice from ice box sensor and wait for ice machine to restart. This may take as long as 5 minutes for sensor to warm. Run ice machine for 10 minutes and turn off.
- 10. Leave ice machine off long enough for all the ice in ice delivery hose to melt.
Depending on ambient temperature, this may take up to 8 hours.
- 11. Repeat start up procedure steps 3 through 9. If you experience problems during repeat of start up procedures, consult troubleshoot instructions.
Call Eskimo Ice Technical Support if needed.
- 12. I have :
 - explained the functions of the 4 safety controls and general operation of the Eskimo Ice machine system to the owner/captain. AND/OR
 - left a complete set of the Eskimo Ice Owner's Papers onboard the vessel.

I have completed each step of the above procedures as check marked. I understand that each step must be completed to validate the warranty of the ice machine by Eskimo Ice and the installation by the authorized Eskimo Ice Dealer.

Signature _____ Date _____

Print Name _____ Company _____

Trouble shooting the E.I. 600 if not producing ice

- 1.** Check to see if power is reaching the ice machine. If raw water pump is running, power is reaching the machine. If power light on temperature control is on, power is reaching ice machine.
- 2.** Check to see that on/off switch is in the “on” position. (see drawing #3)
- 3.** Check high pressure control reset button on top center of control box. See drawing #3. There are two reasons for high button to trip out.
 - A.** Any time raw water pump has malfunctioned or is not circulating enough water, this reset button has probably popped out. Push in to reset. Reset buttons should be pushed in (even if they do not appear to be popped out). Start machine and check overboard discharge of water during one minute delay before compressor starts. If no water is discharging see problem 5 below.
 - B.** If the high pressure button trips out approximately 5 seconds after compressor starts, the problem is not related to raw water cooling but is a problem with machine being overcharged with refrigerant. To correct this problem turn machine off and recover a small amount of refrigerant through the low pressure schrader valve. You may need to repeat this step two or three times until fast tripping stops.
- 4.** Check low pressure control reset button (located to left of high side button). Push in if out. There are three reasons for low tripping.
 - A.** If low pressure control trips after five to ten minutes of running the problem may be improper vent hole in ice hose. See installation instructions (Ice hose installation detail).
 - B.** If low pressure control continues to trip over and over on cold start up and raw water temperature is 55° or lower it may be necessary to reduce water flow though water cooled condenser to get the machine started. As water temperature warms up it will be necessary to increase flow to full pump volume.
 - C.** Low trips one to two minutes after machine starts. Machine may be low on refrigerant. Check frost line as described on third page of trouble shooting.
- 5.** Check overboard discharge of raw water. If not pumping, check to see if pump is running. If you hear pump running but it is not pumping water overboard, check for air locks in hook up hoses. (Hose must run uphill all the way from sea cock to overboard through hull) See RAW WATER PUMP INSTALLATION INFORMATION PAGE with drawings.
- 6.** Check ice delivery spout switch on ice machine. This switch is located on top of the machine at base of stainless steel elbow from which the ice is pushed. It has two red wires attached, one at the top and one at the bottom. If temperature control has malfunctioned and ice has backed up delivery hose to machine, it will trip spout switch. Push to see if it will reset. (See drawing #7) If spout switch trips repeatedly temperature control needs adjustment. See start up procedure #5 and trouble shooting #10. The spout switch will also trip if there are restrictions in the ice delivery hose. If hoses have been improperly installed in the ice selector valve, the spout switch will also trip (see installation instruction on installing the ice valve).

7. Check fresh water supply pressure by removing cover to water reservoir and pushing down float from valve. (Water should be running strongly.) The machine is equipped with a low water pressure switch which will not allow machine to run if there is less than 10 lbs. of fresh water pressure. If there is low or no water pressure, check pressure at water inlet connection at lower back of machine by loosening nut. If pressure is low at this connection, follow water line and check to be sure that valve is turned on. If pressure is still low, boat's water system may be malfunctioning. Check ship's fresh water pressure at another location such as a sink faucet. If pressure is good at water inlet but not when float is pushed down, the in line Y strainer (located in the 1/4" line near water reservoir) may be plugged. To clean: turn off water to ice machine. Open and clean the stainless steel screen in Y strainer. If water still does not run in strongly when float valve is depressed, hole in float valve is plugged and must be cleaned.

8. Temperature control function. The temperature control is designed to stop the ice machine when the ice in the storage box reaches and contacts the sensor. It will restart when the ice melts or is removed from contact with the sensor. If machine is not running and all above checks have been made, the temperature control may be at fault. Follow test procedure #9 below.

9. Temperature control test procedure: Check to see that "S1" is showing on the LCD screen. The control displays temperature when 24v power is being supplied to this control. This display screen should be lit any time main power breaker to the ice machine is in the "on" position. Remove cover. Using a test lead, jump terminal "C" on the lower terminal strip to "NO". If the machine comes on, then the control may be faulty.

The machine can be run with the temperature control "jumped out", except when the ice storage box fills to the top, the ice will back up the delivery hose and trip the spout switch. This will mean that the spout switch will have to be reset manually every time the box fills. To avoid resetting this switch, the box can be emptied before it fills, or the main breaker switch can be turned off before the ice backs up the hose.

10. Temperature control adjustment: If temperature control is still not functioning correctly after checking #9, use the "set" key to enter the programming mode, hit "set" again to view the "setpoint". It should be set between 45 and 60 degrees. It can be adjusted by running the machine until ice is against the sensor for five minutes, viewing the temperature readout, and setting the "setpoint" to that temperature. Set the differential by pressing "set" until "diff" shows blinking on the screen . The correct setting is "1".

11. If the ice machine is to be exposed to temperatures below freezing (32°F), water must be drained from machine or potable anti-freeze must be added to the fresh water supply and flushed through the machine. If you suspect that untreated water has been left in the ice machine at temperatures below freezing and water in the ice maker has frozen, drive motor will be locked up, and will not start. It will continue to click off on internal overload. If water has frozen in the ice machine, the air temperature will have to be raised for many hours until ice in the well insulated freezer will melt, and before the ice machine can be restarted.

12. If fresh water runs through machine and out the ice hose and into storage box when machine is off, the problem may be water siphoning through the machine. See the last sentence (ice delivery hose installation detail) in installation instructions.

13. If loud moaning sound is heard there is a problem with fresh water supply and machine can not be run with out solving the problem. Check water level in reservoir while noise is being heard. If reservoir is empty correct problem with Y strainer or float valve. If reservoir is full, the problem could be lack of or improper vent hole. (See section ice delivery hose installation.) Remove ice delivery hose from stainless ice discharge elbow, install temporary hose or cardboard deflector and test machine if no moaning is heard after 30 minutes problem is vent hole. Read section on installing vent hole and fix as needed. This moaning can also be caused by poor incoming water supply. This can happen in some foreign ports with poor dock water.

Revised: 4/1/95, 7/5/95, 11/18/95, 6/11/96, 11/23/96, 7/97, 8/98, 12/99, 12/01

Further explanations for service technicians

1. The purpose of the solid state time delay (2" X 2" X 3/4" black box with two Yellow wires attached) in the electrical control box is to delay start of the compressor by one minute upon start up of ice machine. This time delay has an adjusting knob on front, which can adjust delay time from 5 sec. to 8 min. This delay is normally shipped from factory set at approximately one minute.

2. The purpose of the auger delay pressure control (right hand control of three at top of electrical box) is to let the auger turn after machine stops. This will clear ice in the evaporator so that the next start up will have less starting load.

3. Freon pressures of this machine will normally run at a low of 9 lbs. and a high of 130 lbs., depending on water cooling temperature. Do not charge this machine by pressures. Charge it by frost line on suction tube. Frost line should be approximately 2" out from evaporator. Over charging may cause high pressure control to trip upon initial start up. If high pressure control constantly trips on cold start up but works OK once machine is running, with full flow of cooling water, freon can be released five seconds at a time to see if the tripping condition is better.

Low pressure control is set at approximately +2 lbs. The low pressure control can be tested by holding up the water float in the water reservoir and dropping the temperature and pressure in the evaporator causing the low to trip.

High pressure control is set at approximately 250 lbs.

Testing procedures to determine condition of electrical parts in electrical control box

- 1.** Turn off ice machine by toggle switch on front of electric box. Make sure spout switch is closed, have someone turn main breaker off and on while listening at ice machine with all other equipment quiet. Each time the power is turned on you should hear click of 24V (top) relay. If you hear the click of relay both the relay and the transformer are OK. If power light on temperature control is lit the transformer is OK.
- 2.** If raw water pump is running the 120V or 230V (lower) relay is OK. Pump and drive motor start at the same time.
- 3.** If steps 1 & 2 show components are OK and auger drive motor is running but compressor is not contactor or time delay may be burnt out. Jump time delay before changing contactor. Also check voltage across contactor coil before changing contactor. Voltage should be the same as supply voltage to machine.

Revised: 7/5/95, 11/23/96, 7/97, 8/98, 12/99, 12/01

Maintenance

Turn unit off before performing any maintenance.

Monthly

1. Check the Strainer in the water filter on the fresh water fill to make sure it's clean.
2. Check the Water Reservoir to make sure it's clean and not overflowing.
3. Have the condenser coils cleaned when you have your a/c coils cleaned.
4. Check the Strainer and thru hull for debris.
5. Check the gear case oil – remove the clear plastic tube vent by pulling it off. Insert a white tie wrap into the gear case and remove. Liquid should be yellow in color. If the liquid is milky you have water in the gear case – call for service. There should be 1 1/8 to 1 1/4” of oil – if case is filled to the top you have water – call for service.
6. If the boat is going to sit for a long period of time (3 months) be certain to drain the auger assembly by detaching the clear tube that comes from the bottom of the water reservoir from the auger.

Eskimo Key

A The Electrical Box

- 1 On-Off Switch
- 2 Low Pressure Control
- 3 High Pressure Control
- 4 Auger Delay
- 5 Low Pressure Control Reset Button
- 6 High Pressure Control Reset Button
- 7 24v Relay
- 8 115v or 230v Relay
- 9 115v or 230v Contactor
- 10 115v or 230v Transformer

B The Compressor

- 1 Low Pressure Manifold
- 2 Electric Junction Board
- 3 Start Relay
- 4 Electric Box
- 5 Start Capacitor
- 6 Low pressure service valve

C The Motor/Gearbox Assembly

- 1 Auger Motor Cover Bolt
- 2 Auger Run Capacitor Cover
- 3 Gearbox Vent
- 4 Gearbox
- 5 Vent Extension
- 6 Drip Pan
- 7 Switchplate Cover
- 8 Coupling

D The Compressor Module

- 1 Sight Glass
- 2 Terminal Strip for Wire Harness

E The Evaporator Module

- 1 Wire Harness
- 2 High Pressure
- 3 Low Pressure Connection

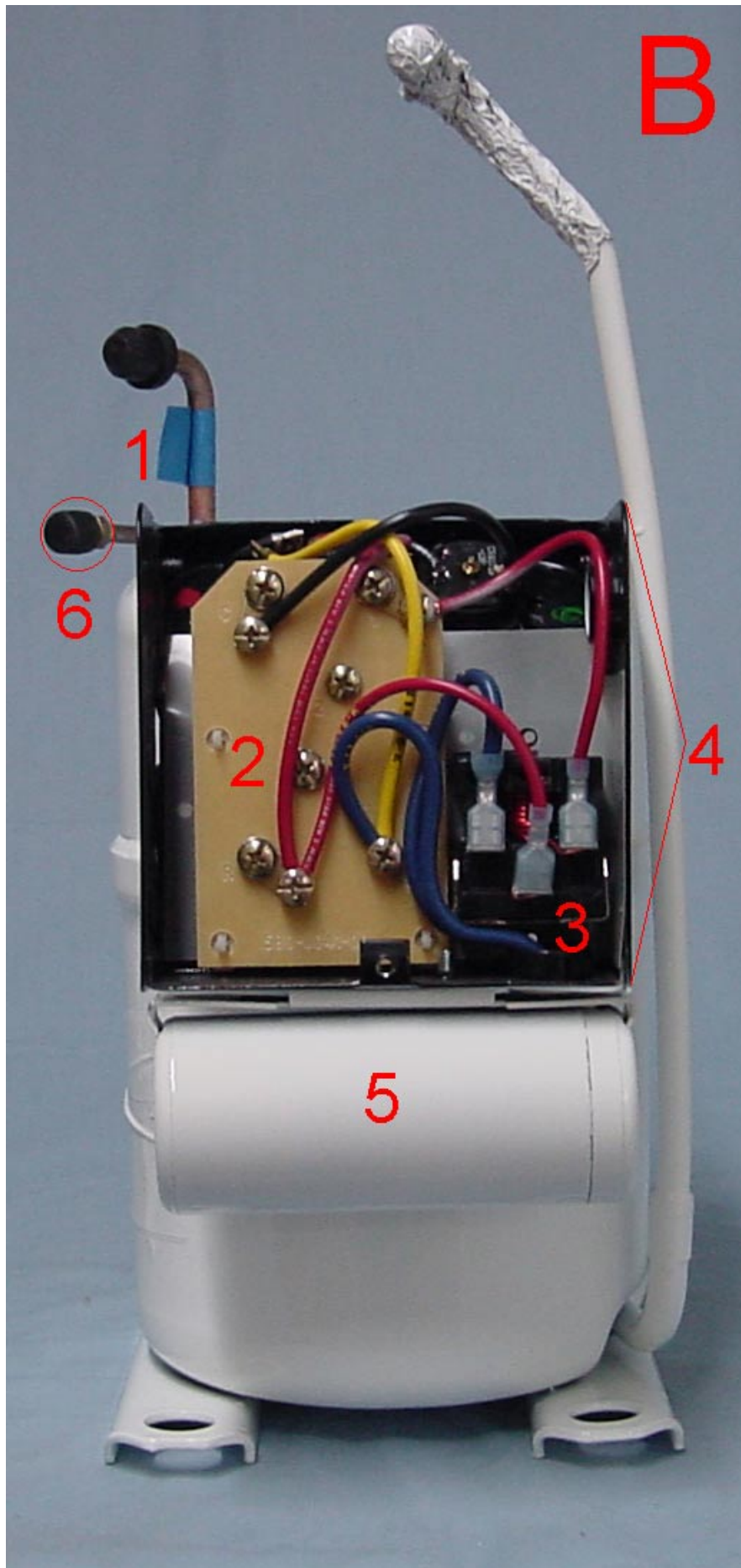
F Isometric View

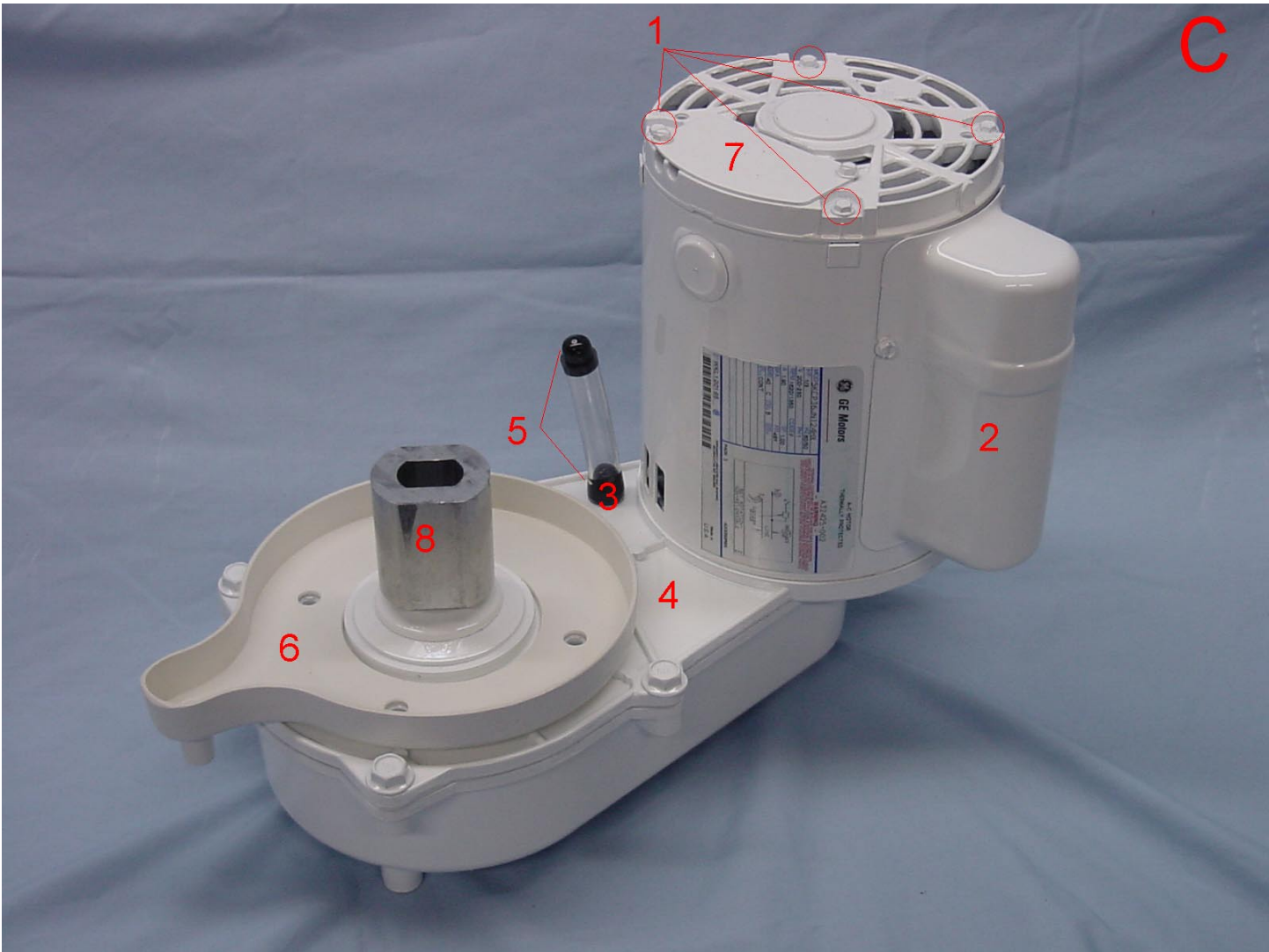
- 1 The Evaporator
- 2 Y strainer
- 3 raw water inlet
- 4 raw water outlet
- 5 high pressure service valve
- 6 vent hose
- 7 spout switch
- 8 spout reset button
- 9 auger motor cover
- 10 Water Reservoir
- 11 Ice outlet elbow
- 12 Fresh Water inlet
- 13 Condensate Pan
- 14 Frame
- 15 Pressure Control adjusting screws
- 16 Condenser
- 17 Water Switch
- 18 Pump Pigtail
- 19 Dryer

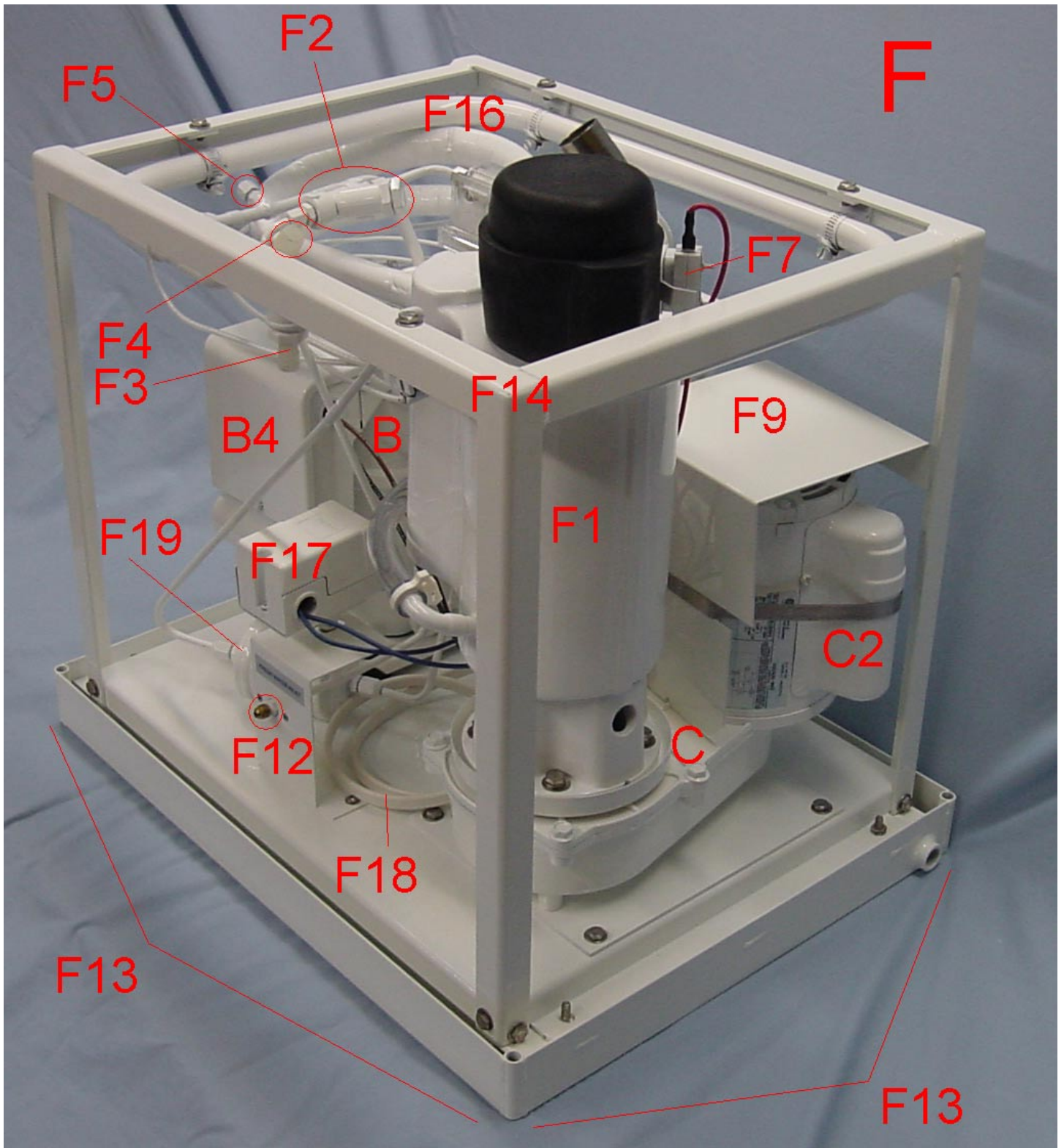
G Ranco ETC Control

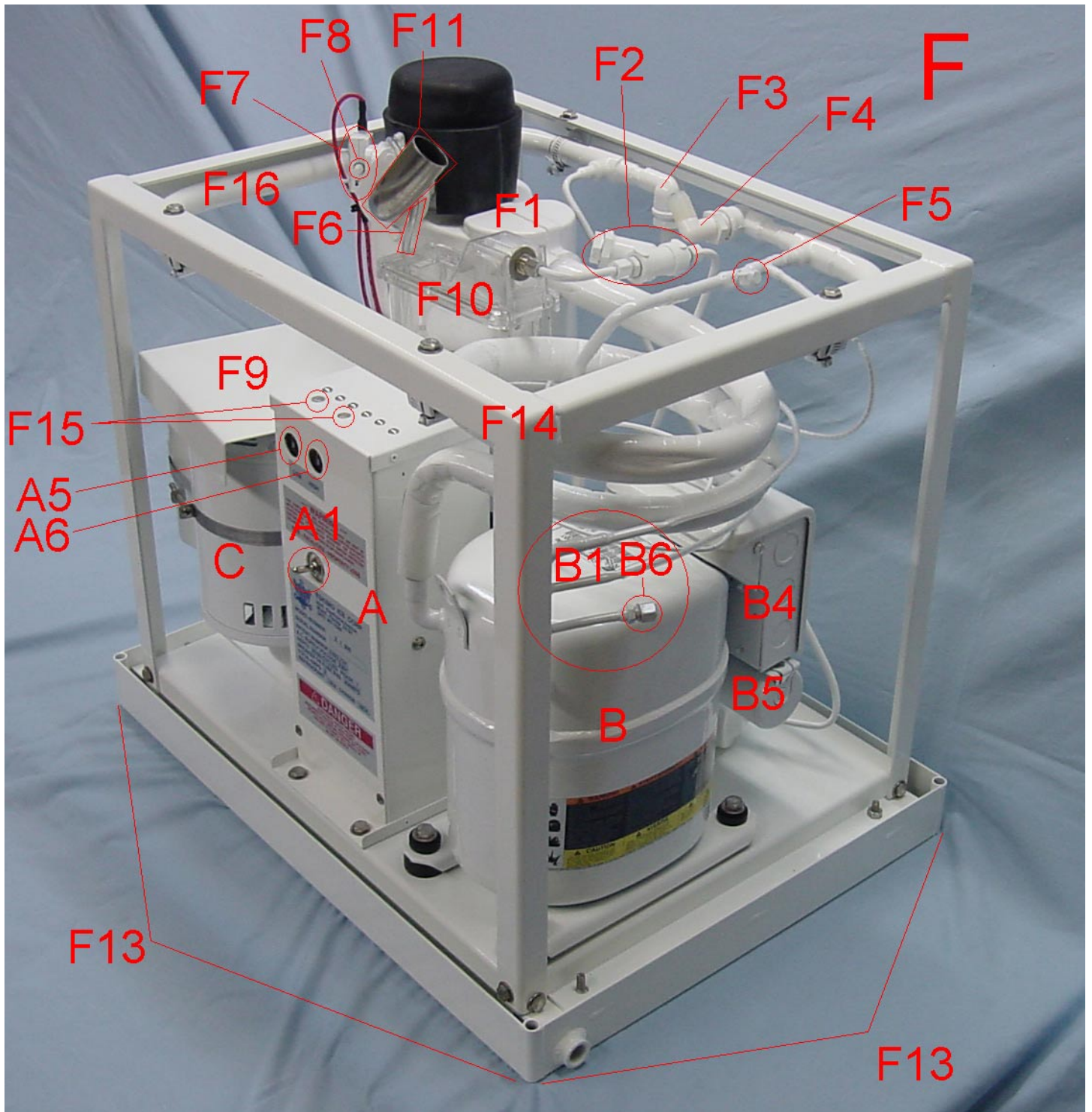
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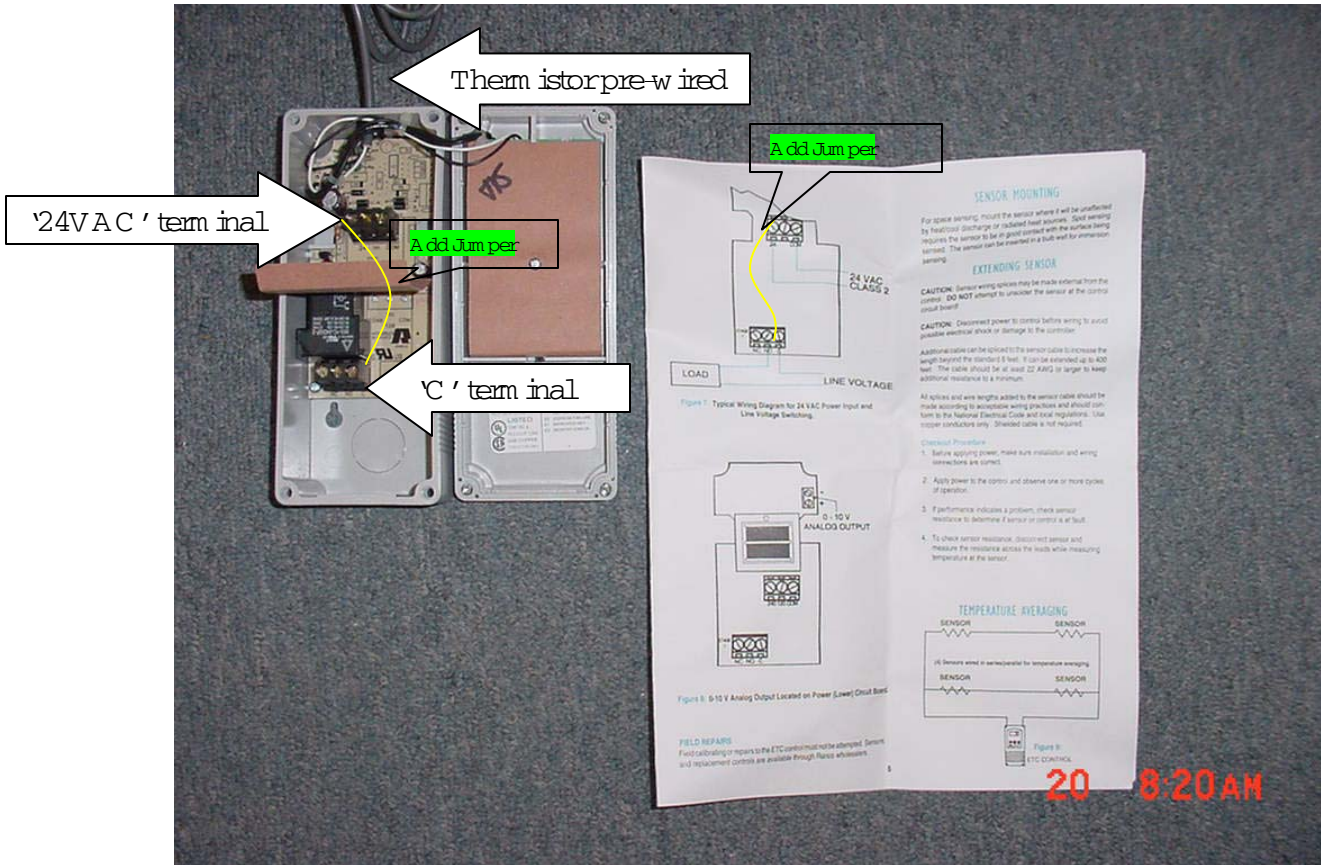








Ranco ETC



'24VAC' terminal

Thermistor pre-wired

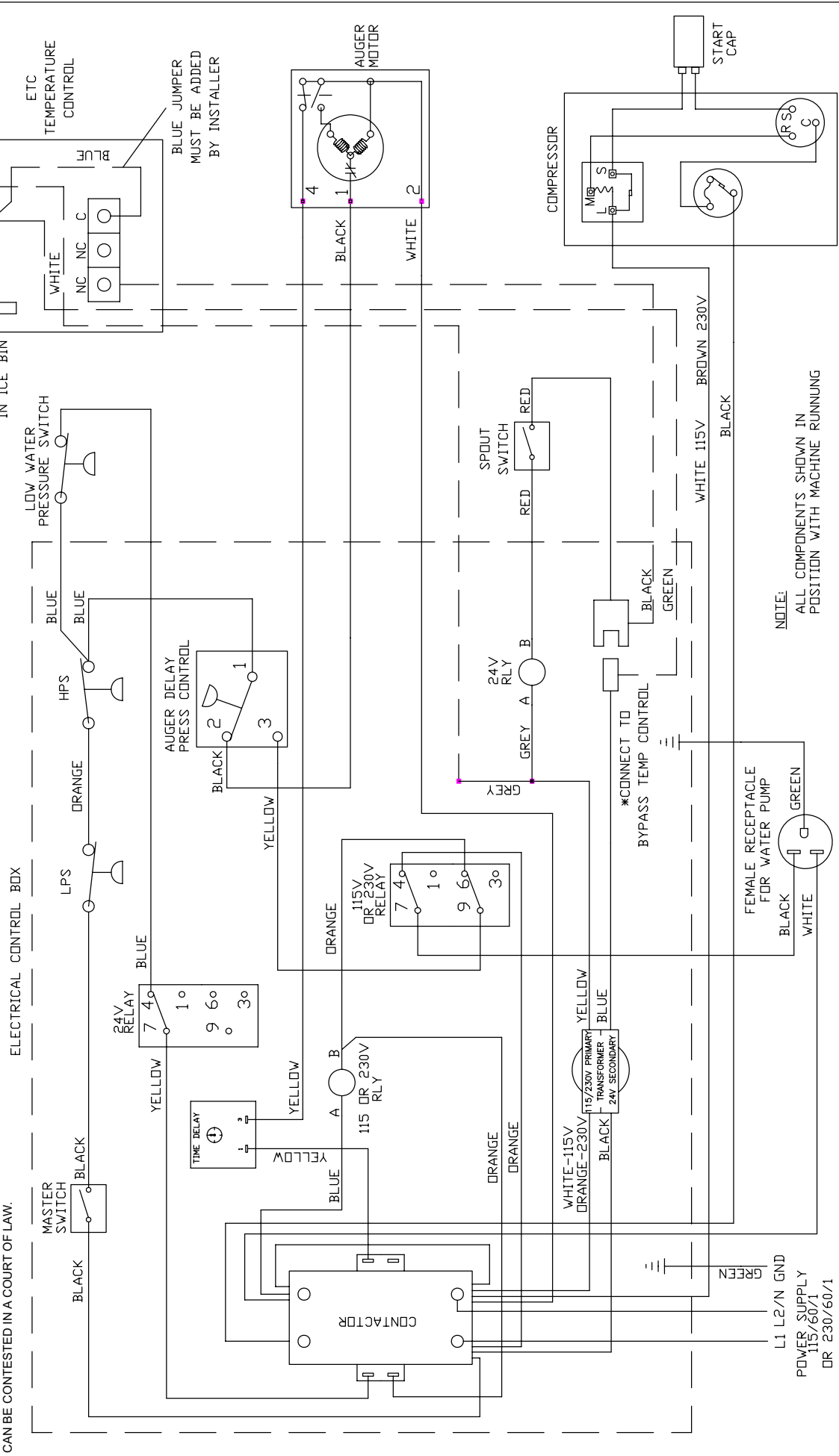
Added jumper

'C' terminal

Added jumper

Requires jumper from '24VAC' terminal on top strip to 'C' on bottom strip. Thermistor comes pre-connected, and is capable of being lengthened. Wiring diagram and instructions come in the box. Thermistor cover and screws will be included.

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NOTE: ALL COMPONENTS SHOWN IN POSITION WITH MACHINE RUNNING

REV	DATE	REVISION DESCRIPTION	DWG	APR

Dometic Corporation		Eskimo Ice	
MODEL E1600 115V/230V		WIRING DIAGRAM	
DATE: 4/12/06	DWG BY: DRR	PART NUMBER: 0440145	O.I.
SCALE: NTS	APR BY: RAP,MFG	G9010001	

TECHNICAL ASSISTANCE

Applications:

Dometic Environmental Corporation
2000 N. Andrews Ave. Ext.
Pompano Beach, FL 33069-1497 USA
Phone: 954-973-2477
Facsimile: 954-979-4414

Dometic Environmental Corporation
P.O. Box 15299
Richmond, VA 23227-0699 US
Phone: 804-746-1313
Facsimile: 804-746-7248

Service:

Dometic Environmental Corporation
2000 N. Andrews Ave. Ext.
Pompano Beach, FL 33069-1497 USA
Phone: 954-973-2477
Facsimile: 954-979-4414

Dometic Environmental Corporation
P.O. Box 15299
Richmond, VA 23227-0699 US
Phone: 804-746-1313
Facsimile: 804-746-7248

24 Hour Service Hotline: 1-888-440-4494

Email: sales@dometicenviro.com
Web: www.dometicenviro.com



Dometic Environmental Corporation

2000 N. Andrews Ave. Ext. • Pompano Beach, FL 33069-1497 USA • Phone: 954-973-2477 • Facsimile: 954-979-4414

P.O. Box 15299 • Richmond, VA 23227-0699 USA • Phone: 804-746-1313 • Facsimile: 804-746-7248

Website: www.dometicenviro.com • Email: sales@dometicenviro.com



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