

Polaris Beer Superchiller™

220V / 60Hz

Installation, Operation & Service Manual



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1. Introduction

Thank you for purchasing this quality Lancer product. All Lancer products are constructed using the highest quality materials and components. They are designed to the highest possible standards, therefore offering our customers endless hours of optimum performance.

2. The Company

Hoshizaki Lancer is a wholly owned subsidiary of Lancer Corporation, a world leader in the supply of Beverage Dispensing Equipment based in San Antonio, Texas. Lancer has manufacturing bases and distribution networks in 97 countries. Lancer is in turn ultimately owned by Hoshizaki Electric Co Ltd of Nagoya, Japan. Hoshizaki is a global leader in food service equipment.

Hoshizaki Lancer's head office and manufacturing base is located in Adelaide (SA), with branch offices and warehousing facilities in Sydney (NSW), Melbourne (VIC), Brisbane (QLD), Perth (WA) and Auckland (New Zealand).

3. Our Products

Lancer specialises in the design, engineering, manufacture, and marketing of beverage dispensing and Heat Recovery equipment in three core categories:

Soft Drink Equipment

Mechanically cooled and ice cooled soft drink dispensers, frozen beverage dispensers, dispensing valves, carbonators and an extensive line of beverage dispensing parts and accessories.

Beer Equipment

Lancer manufactures and markets beer dispensing and chilling equipment, and related accessories. Products include founts, chillers, chillerplates, drip trays, taps, handles, beer line cleaning equipment and an extensive line of beverage dispensing parts and accessories.

Heat Recovery Equipment

Lancer manufactures a range of Heat Recovery systems designed to provide our customers with free hot water.

4. Product Details

4.1 Product Features

The Lancer Polaris chiller is a refrigerated unit designed to maintain a liquid product temperature through the python and dispenser. The Chiller may be used in ice bank or glycol operation.

4.2 Specifications

Version	SPK2-11/8
Voltage	220 Volts
Frequency	60 Hz
Max Current Draw	11 Amps
Ambient Temperature	36 -104°F
Heat Rejection	11173 Btu/hour

Dimensions

Width	34.6 in
Depth	20in
Height with 6in legs	43.5in

Weight

Shipping	257.4lbs
Empty	264.4lbs
Operating	400.4lbs
Refrigerant	28.2oz R134a
Tank	19 US gallons
Ice bank Weight	39.6lbs
Construction	Stainless Steel

4.3 Models

S4E POLARIS SPK2-11	Chiller with SPK2-11 Pump
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4.4 Options

- Legs are standard; Optional casters

4.5 Ice Bank

All polaris chiller units are suitable for ice bank operation as an alternative to glycol / water. Simply fill tank with water, no other change over is required.

Refrigeration Unit will not operate unless the tank is full of fluid. Icebank / Glycol level control also provides refrigeration high temperature protection. If red led on control board is lit, rectify cause of high liquid line temperature, then turn off / on to reset.

5. Chiller Safety Information

5.1 Safety Instructions

For your personal safety, and that of others working around you please read, understand, and follow thoroughly all safety instructions included in this manual and on the Chiller.

- Review all applicable OSH (Occupational Safety & Health) regulations.
- Review all applicable Beverage Dispensing Gas Standards
- Learn how to operate the Chiller and use the controls properly.
- Do not allow untrained personnel to operate the machine.
- Ensure that the Chiller is maintained according to service manual instructions.
- Do not allow any unauthorised modifications to the machine.

5.2 Recognise Safety Alert Symbols

The safety alert symbol precedes **Warning** and **Caution** notes throughout this manual. To prevent personal injury or damage to the machine these alerts must be strictly adhered to.



Warning

Alerts to a potentially hazardous situation that if not avoided **CAN** result in death, serious injury.



Caution

Alerts to a potentially hazardous situation that if not avoided **MAY** result in injury or equipment damage.

5.3 Operating



Warning

Chillers are intended for indoor operation only; do not operate outside unless suitably protected by a weatherproof enclosure. This appliance is not suitable for installation in an area where a water jet could be used.



Caution

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance.

5.4 Service & Maintenance

**Caution**

Installation of Chiller and service work should only be performed by fully trained & certified Electrical, Plumbing, & Refrigeration Technicians.

**Warning**

ALL WIRING AND PLUMBING MUST CONFORM TO LOCAL AND NATIONAL CODES.

**Warning**

CHILLER MUST BE ISOLATED FROM ELECTRICAL SUPPLY BEFORE COMMENCING ANY SERVICE OR MAINTENANCE WORK.

6. Installation

**Warning**

To avoid personal injury or damage, do not attempt to lift a Chiller without help. Use of a mechanical lift is recommended.

6.1 Receiving

Each unit is completely tested under operating conditions and thoroughly inspected before shipment. At time of shipment, the carrier accepts the unit and any claim for damage(s) must be made with the carrier. Upon receiving units from the delivering carrier, carefully inspect shipping crate for visible indication(s) of damage. If damage exists, have carrier note damage on bill of landing and file a claim with the carrier.

6.2 Unpacking

**Caution**

The use of gloves is recommended to protect hands from potential injury from sharp edges. The Chiller must always be handled in a vertical position.

Carefully unpack the Polaris Chiller from the shipping carton, remove the wooden base.

If appropriate, assemble legs to unit by carefully tilting (tilt should not be more than 45°).

Inspect unit for concealed damage and if evident, notify delivering carrier and file a claim against the carrier.

6.3 Selecting a Location

**Warning**

Chillers are intended for indoor operation only; do not operate outside unless suitably protected by a weatherproof enclosure. This appliance is not suitable for installation in an area where a water jet could be used.

**Caution**

The Chiller is not suitable for use in subfreezing temperatures. To prevent damage to the water supply line, turn off and drain unit when air temperature is below zero.

- The Chiller should be located in a well-ventilated, firm, level location close to dispenser, water and electrical supplies, with easy access for servicing
- SPK2-11/8 chillers are intended for use in a non temp controlled storage area.
- Ensure sufficient clearance around chiller to allow good fresh air circulation through the condenser – allow at least 8in at rear and sides, with the top and front unobstructed
- Installation should only be performed by a qualified and competent technician.

6.4 Mounting Chiller

- Install on a flat, level surface using adjustable legs or casters (Optional).

**Caution**

Chiller operational weight is 400lbs; ensure that all supporting structures are certified for this loading by a registered Mechanical Engineer. Supporting structure must be securely fixed to floors or walls.

6.5 Connecting Python

Connect Python to Chiller and Dispenser.

**Caution**

NOTE: The Chiller is rated to operate with a maximum of 100ft of python connected. Exceeding manufacturer's ratings may cause damage to the Chiller and void warranty.

Python Details

Recirculation Lines 1" Dia Glycol tubing

6.6 Plumbing the Drain

The 3/4in overflow drain tube exiting from the RH Pump Panel of the unit should be plumbed to a suitable drain, installation in accordance with local regulations.

6.7 Filling Unit

Glycol - Remove Chiller lid and fill the tank with glycol/water mixture of 30 Percent until mixture flows out overflow tube.

Water - If the unit is to be used as an ice bank, simply fill with clean water until it flows out the overflow tube.

6.8 Electrical Connection

- This unit is connected to the supply via a flexible cord fitted with a 3 pin plug.
- Check the name plate on the machine for electrical supply requirements. Use only the power supply specified on the name plate.

**Warning**

If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

**Warning**

To avoid possible fatal electric shock or serious injury the Chiller must be electrically grounded. Electrical Connection Must Be Made In Accordance With The Appropriate Local Codes And Regulations. Use of an RCD is recommended.

6.9 Commissioning

- Connect chiller power supply lead to an appropriate 3 pin socket outlet and switch on. Compressors, condenser fans and pump/agi motor should all operate.
- Ensure pump plug is connected and pump is running.
- Allow lines to fill. Ensure liquid level does not drop below pump intake during initial filling of the python.
- As required top up the unit.
- Check all connections for leaks.
- Fully insulate all chilled lines and ensure air tight at all connections.
- **Glycol Units:**
 - Check water / glycol mixture with refractometer. (see chart pg 12 for concentration)
 - Check the set point of the controller (reset per 6.11)
 - Monitor the indicated temperature on the thermostat and ensure temperature reduces to the set point.

6.10 Purge System

- Progressively activate each fount connected to the Chiller systems to achieve an uninterrupted flow of product.

7. Thermostat– Carell Pjeasy – Thermostat Parameters



NOTE:

The Thermostat will not be energised unless the pump switch is turned on.

7.1 Thermostat Settings

Parameter	Type	Def	Description
St	Set point	28	Refrigeration will turn off when glycol reaches this temperature.
rd	F	2.0	Temperature differential, glycol temperature will increase from the cut out point by this value before the refrigeration turns on.
AF	F	23	Antifreeze alarm set point. If the evaporator suction line reaches this temperature the control will stop the refrigeration system and will require a manual reset. Antifreeze alarm can be reset by holding “UP” and “DOWN” keys for 5 seconds. In case of probe 2 failure, the antifreeze alarm function is inhibited and regulation is still performed. If “AF parameter is set to its minimum value the alarm function is inhibited.
rt	F	**	Time (in hours) of max/min temperatures logging.
rH	F	**	Highest/ maximum recorded temperature.
rL	F	**	Lowest/ minimum recorded temperature.
AH	F	36.0	High temperature alarm (relative to set point).
AL	F	7.2	Low temperature alarm (relative to set point).
c2	F	3 mins	Minimum time in mins after turning off before the control will give an output to the refrigeration solenoid (short cycle protection).
r4	F	13.0	Value to increase the set point in ECO mode.
r2	F	41	Maximum allowed set point.
r1	F	23	Minimum allowed set point.

Controls programmed during manufacture.

All other non used parameters are hidden to avoid confusion.

7.2 Programming Instructions

7.2.1 Set Point

Push and hold the “SET” key, “st” is displayed then the current set point is displayed and flashes, release “SET” key to change the set point value.

Push the “UP” or “DOWN” arrow keys to change the set point value.

To accept the new value press the “SET” key or wait 60 seconds without pressing any keys for the unit to time out.

7.2.2 Other Parameters

Push and hold the “SET” key, until “rd” is displayed.

- Select the required parameter to change using the “UP” or “DOWN” arrow keys then press the “SET” key to display its value.
- Press the “UP” or “DOWN” key to change its value.
- Press the “SET” key to store the new value and move to the next parameter.

To exit from programming mode press the “SET” key for 3 seconds or wait 60 seconds without pressing any keys for the unit to time out.

7.2.3 Eco Mode

In the ECO mode an offset is added to the Set point: “St” + “r4”.

To set the ECO mode press and hold the “UP” key, “on” or “oF” is displayed showing how ECO mode will be changed, when “on” or “oF” disappears release key. In ECO mode “Ec” is displayed alternated to probe 1, Glycol temperature actual value.

7.2.4 Alarm Signals

When an alarm is activated, the display shows the corresponding message that flashes alternating with the temperature.

Message	Cause	Reset
“E0”	Glycol Probe Failure	Automatic
“E1”	Refrigeration Line Probe Failure	Automatic
“LO”	Low Temperature Alarm	Automatic
“HI”	High Temperature Alarm	Automatic
“AF”	Antifreeze Alarm	Manual Antifreeze alarm can be reset by holding “UP” and “DOWN” keys for 5 seconds.

8. Scheduled Maintenance



Warning The Chillers must not be cleaned by a water jet.

The following Chiller routine maintenance should be performed at the intervals listed.

8.1 Scheduled Maintenance

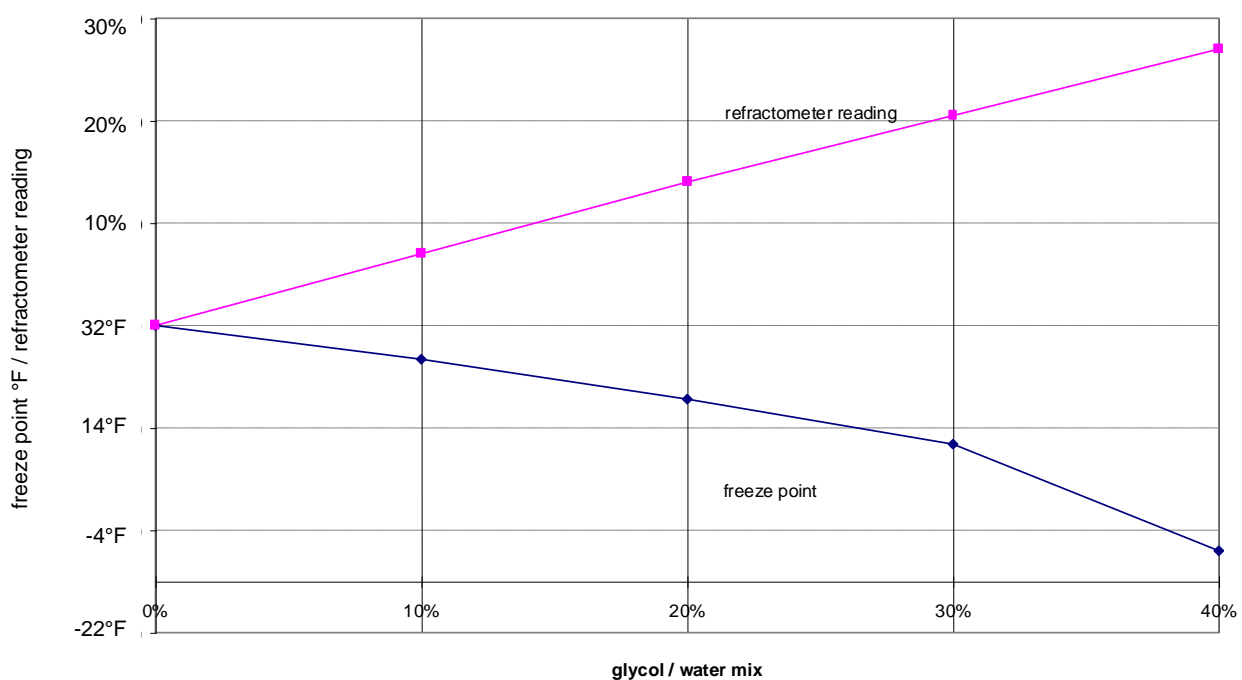
8.1.1 Weekly

- As per brewery instructions, ensure weekly sanitisation of the whole beer system is carried out, including keg couplers, beer lines, chiller coils, pythons, founts and taps.

8.1.2 Monthly

- Disconnect the machine from the power supply.
- Remove the condenser filter and rinse in warm soapy water.
- Replace the condenser filter.
- Check the tank level. Fill if necessary.
- Check operation of pump.
- Check for beer leaks.
- If Glycol type, inspect and if contaminated replace with 30% Glycol and 70% Water mix.
- Check concentration with a refractometer.
- Reconnect the machine to the power supply.

Relative freeze points and refractometer readings for propylene glycol / water mix

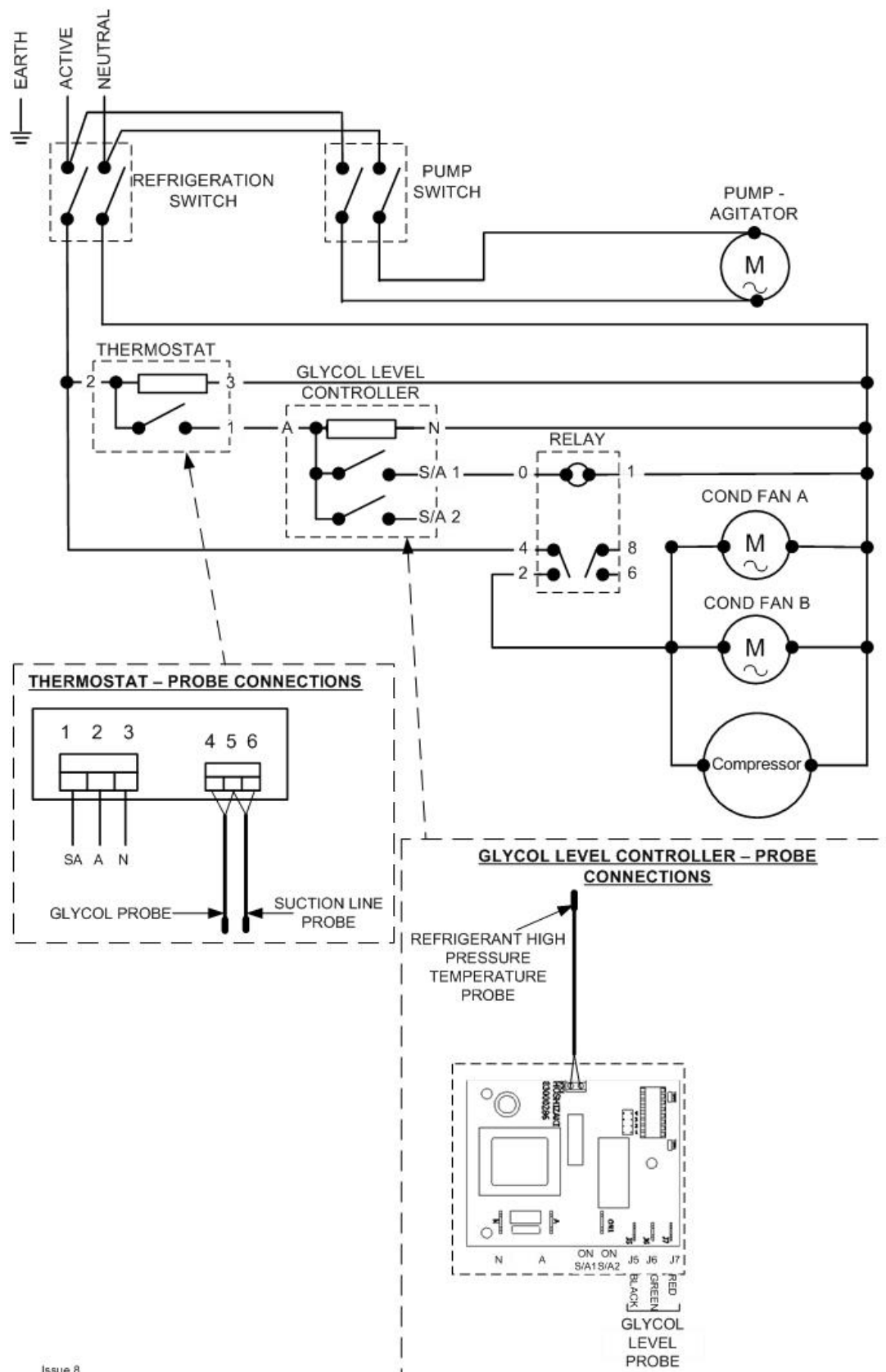


8.1.3 Yearly

- Disconnect the machine from the power supply.
- Check interior of the tank, clean product coils and evaporator if necessary to remove any accumulated deposits.
- Check pump operation
- Inspect agitator blade for deposits and wear.
- Reinsert overflow tube and re-fill tank with water or Glycol/water mix per above.
- Reconnect power supply and start machine.

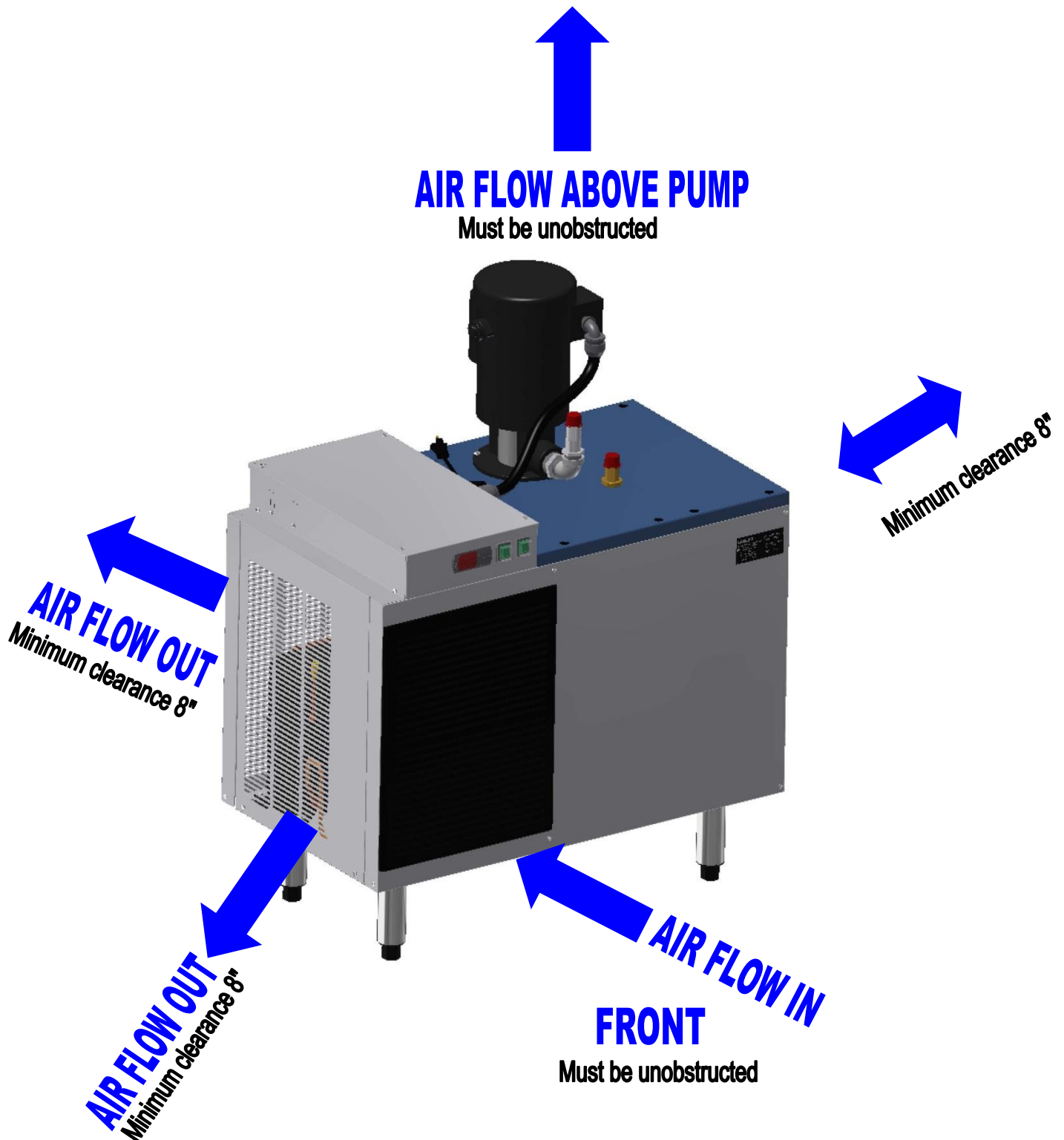
9. Electrical Circuit Diagram

REFRIGERATION ELECTRICAL CIRCUIT DIAGRAM



Issue 8

10. Airflow Diagram



11. Trouble Shooting

11.1. Refrigeration

TROUBLE	CAUSE	REMEDY
Compressor will not start.	<p>Power Failure.</p> <p>High Pressure temperature switch activated. LED on Ice Bank Control board illuminated.</p> <p>Ice bank control faulty contacts not closing. Low tank level.</p> <p>Check compressor start mechanism components.</p> <p>Thermal overload faulty, open, circuit compressor seized, contactor faulty.</p>	<p>Check for blown fuse, supply cord pulled out or supply outlet turned off.</p> <p>Turn chiller "off" at supply socket then "on" again to reset controller.</p> <p>Check Ice bank control using Procedure on page 15. Replace control or probe if defective.</p> <p>If faulty, replace e.g. capacitors, start relays.</p> <p>Replace compressor, check condenser, check power supply, evacuate system and if necessary fit burnout drier to industry standards.</p>
Compressor short cycling on thermal overload (frequent starting and stopping of the compressor while control contacts remain closed).	<p>Dirty condenser.</p> <p>Restricted air flow over unit.</p> <p>Low supply voltage.</p> <p>Defective thermal overload.</p> <p>Check wiring connections.</p> <p>Fan motor bearings tight or seized.</p>	<p>Clean condenser of all lint and dirt.</p> <p>Check for air restriction to condenser.</p> <p>Check with voltmeter.</p> <p>Replace compressor.</p> <p>Tighten if loose.</p> <p>Replace motor(s)</p>
Product too warm	<p>Control defective (permanently open circuit).</p> <p>Low refrigerant charge.</p> <p>Check pump motor, seized or fused.</p>	<p>Check Carel control using procedure on page 9. If icebank, page 15. Replace control or probe if defective.</p> <p>Leak check, repair leak, charge with correct amount of refrigerant.</p> <p>Replace if not working.</p>
Compressor runs too long or doesn't cycle.	<p>Location too hot.</p> <p>Chiller overloaded.</p> <p>Loss of refrigerant.</p> <p>Condenser clogged.</p> <p>Fan not operating.</p> <p>Inefficient compressor</p>	<p>Relocate or improve ventilation.</p> <p>Use larger model, or reduce python length.</p> <p>Leak check and repair.</p> <p>Clean off dust, line, grease, etc.</p> <p>Remove obstruction or replace motor.</p> <p>Replace</p>

12. Hydra Icebank Control Go/No Go Test

The Polaris has both thermostat and icebank / tank level control.

When operated as an icebank unit:

The thermostat will be energised continuously and use to display the bath temperature. The refrigeration system will be controlled by the icebank coverage of the probe.

When operated as a Glycol unit:

The thermostat in conjunction with the Hydra control will control the refrigeration and display the tank temperature. The icebank / level control will be energised continuously to provide low tank level protection.

For both systems, the liquid line probe from the Hydra control provides High Temp protection for the refrigeration system.

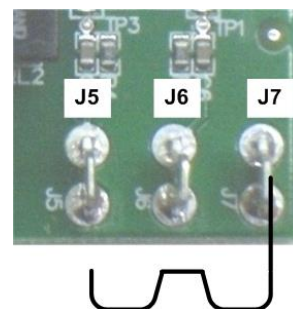
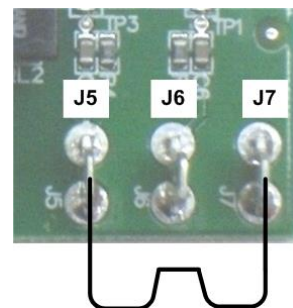
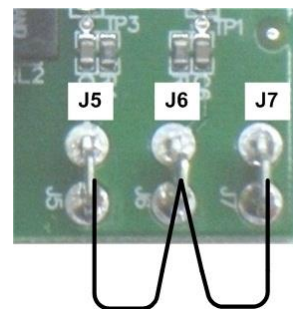
The following test is to determine if the icebank / level control is operating correctly.



Warning

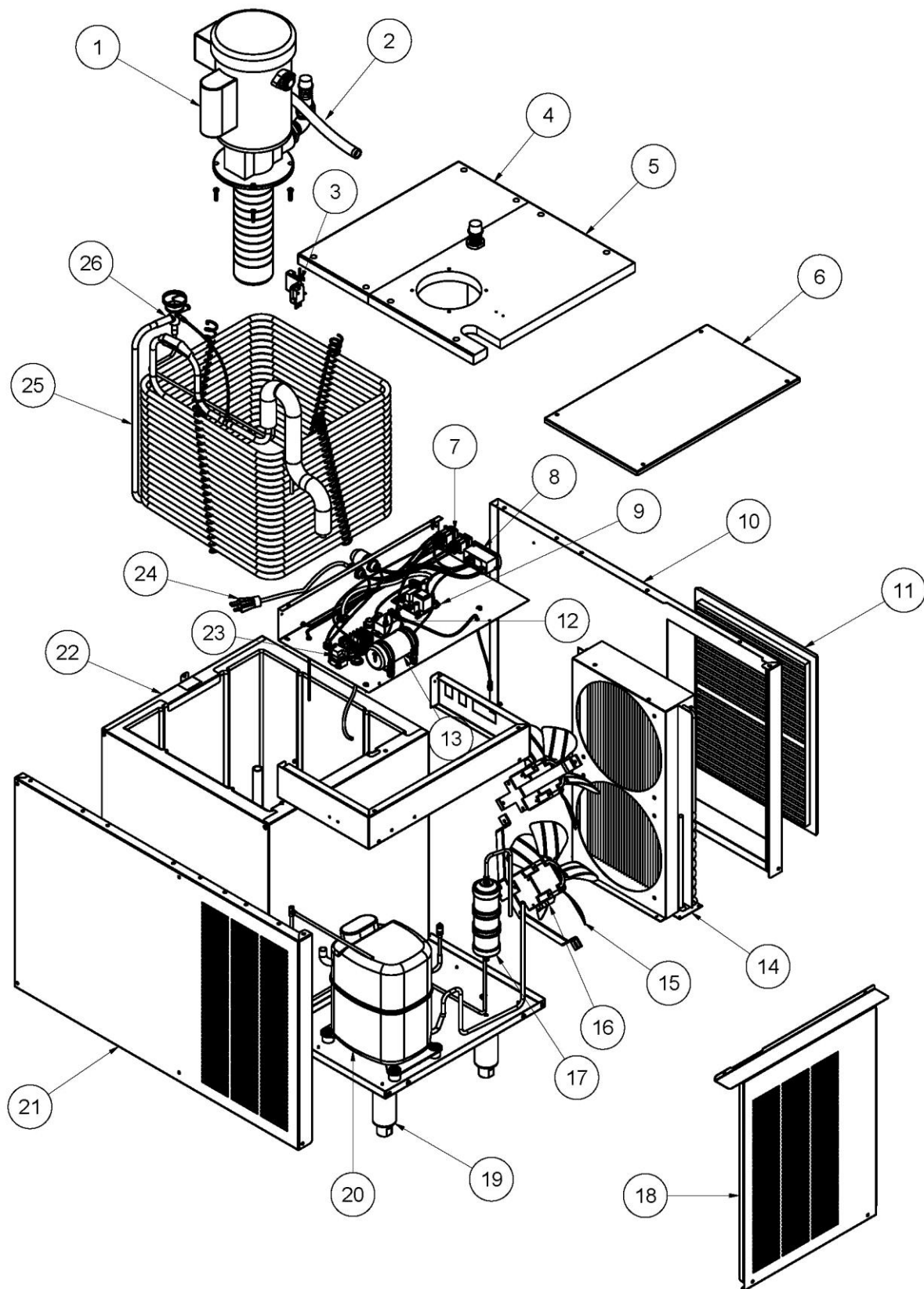
220VAC is present on terminals N, A, ON 1, ON 2 terminals. Work should only be performed by fully trained & certified Electrical, Plumbing & Refrigeration Technicians.

1. Remove the ice bank probe connections from terminals J5, J6, J7.
2. Connect alligator jumper to terminals J5, J6, J7. Ice bank control relay should close and refrigeration system start.
(Simulates water covering all probes)
3. With refrigeration system operating (ice bank control relay energised) remove alligator jumper from terminal J6. Refrigeration system should continue to operate.
(Simulates ice growth over green probe. Water still contacting red and black probes)
4. With refrigeration system operating, remove alligator jumper lead from terminal J5. Refrigeration system should stop.
(Simulates ice growth over black probe only)



13. Refrigeration & Body Assembly Parts List

Ref	Parts No	Description
1	78000054	PUMP ASSY SPK2-11 220/60
2	83000298	CONDUIT 1/2" LIQUID TIGHT 0.4MT
3	16522334	ICE BANK PROBE
4	85000093	LID OPENING POLARIS
5	85000094	LID POLARIS SPK 220/60
6	61000433	ELECTRICAL BOX LID POLARIS 220/60
7	83000245	SWITCH ROCKER GREEN ILLUMINATED
7a	83000246	SEALING BOOT
8	83000184	PJ EASY OEM CONTROL KIT
9	83000286	CONTROL LEVEL I/B HYDRA R2
10	61000319	FRONT PANEL S4E
11	95000642	LOUVRE KMD-0101AA
11a	95000641	FILTER (2-OFF REQUIRED)
12	83000303	TYCO RELAY
13	17000046	COMPRESSOR CAPACITOR
14	84000017	CONDENSOR
15	87000101	FAN BLADE 34°
16	80000102	MOTOR FAN EBM
17	87000102	RECEIVER DRIER
18	61000247	GRILL END PANEL S4E
19	79232218	LEG
20	80000022	COMPRESSOR
21	61000323	BACK PANEL S4E
22	61000320	RH PANEL BLANK S4E
23	80000073	COMPRESSOR RELAY
24	83000283	PLUG AND CORD SET
25	62000105	EVAP ASSY S4E
26	83000114	TX VALVE

13.1. Assembly Diagram

14. Certificate of Warranty

It is the policy of Hoshizaki to provide to its current customers, warranty for all equipment supplied and installation work performed within a specified period.

Parts and Equipment

Lancer provides a warranty period of twelve (12) months from the date of original invoice for all manufactured parts and the associated labour. Repair or replace of defective parts will be at the sole discretion of Lancer.

Changeover parts will be invoiced to the customer at the customers normal purchase cost and upon return of the warranty item and validation of the claim, the invoice will be credited.

Installations

Lancer provides a warranty period of twelve (12) months from the date of final invoice for workmanship after the completion of any installation work, provided the parts and labour are completed by Lancer or its subcontractor.

Labour

Lancer will not normally cover any labour costs associated with a warranty claim. Subject to the approval of the Divisional Sales Manager, Lancer may choose to reimburse the customer for some or all labour costs associated with a warranty claim. Any claim for labour costs must be authorized by Lancer prior to the work being undertaken.

Exclusions

Lancer will not accept any liability or cost associated with any consequential losses (such as loss of syrup or beer), loss of profit or damage to property as a result of faulty product.

Warranty shall not apply:

- a) If in the opinion of Lancer, the equipment has been used in a situation the equipment has not been designed for;
- b) If in the opinion of Lancer, the equipment has been subject to abuse, negligence or accident;
- c) If connected to improper, inadequate or faulty power, water or drainage service or operated using incorrect, insufficient or contaminated lubricants, coolants, refrigerants or additives;
- d) Where the product is installed, maintained or operated otherwise than in accordance with the instructions supplied by Lancer;
- e) Where the product has been damaged by foreign objects;
- f) Where the product has been serviced, repaired, altered or moved otherwise than by Lancer or its nominees or using other than Lancer approved replacement parts.

15. Manufacturer's Checklist

Checked by Date

Gas Charge Icebank Probe fitted

Electrically tested by (REF) Refrigeration tested by

TAG No.

- ☐ Compressed wiring connection label affixed, wiring checked and label signed
- ☐ Refrigeration system final check. Ensure evaporator fully frosts.
- ☐ Check all tube work for rubbing e.g. discharge line, liquid line, TX capillary.
- ☐ Condenser not touching divider panel or grille.
- ☐ Agitator blades tight and not touching coils cradle.
- ☐ Overflow pipe correct height and positioned straight.
- ☐ All motors and pumps secured and mounted correctly.
- ☐ Check icebank and temp probe position and tightness.
- ☐ Chiller sticker correctly positioned and straight.
- ☐ Attention sticker fitted and correctly positioned.
- ☐ Clean exterior of unit including power cords.
- ☐ Warning sticker applied.
- ☐ Check air filters are installed.
- ☐ Check body for sharp edges.
- ☐ Check lid for cleanliness and rough edges. Fit and secure.
- ☐ Copy checklist & file, put manual/checklist in plastic bag & place in the tank area.
- ☐ Customer asset No.

W/O

Affix label here