

ISKERFI HF
Skútahraun 2
220 Hafnarfjörður

Sími: +354 555 6400

Fax: +354 555 6401

e-mail:liquid-ice@liqui-ice.is

B-120

Liquid ice machine B-120

1. Description

For Liquid Ice production the system requires seawater or minimum 3% NaCl concentration.

1.1 B-120 technical specification

B-120 ice machine overall size LxWxH:	1600x1200x1750 mm
Weight	1000kg
Power for cabinet	3 x 400v 50Hz
Power consumption	22kW
Motor valves, 3- way T-valves	24v AC/DC
PLC unit	Simens 216-2
Display	Simens Simatic OP7-DP
Modul	Simens EM235
230v Power modul	Simens SITOP Power 5
Freon	• R-404A - 48 kg

1.2 Component function

1.2.1 System controls

The Control cabinet for the ice machine controls the compressor, generators, and all other electrical parts on the machine. The condenser water pump can also be controlled from this cabinet as well as the start of the precooler.

If there is a storage tank then there is also a separate control panel, which is mounted on the wall beside the storage tank. From this panel the control of the mixing unit in the tank and the ice-pump is controlled. Also from here the start and stop of the ice machine is controlled depending on the level in the storage tank.



If the control cabinet is opened, electric conductors at dangerous voltage levels are exposed. Only a qualified electrician should open the control cabinet and perform necessary maintenance.

BE SURE TO TURN THE MAIN SWITCH OFF AND DISCONNECT THE UNIT FROM THE MAINS SUPPLY BEFORE OPENING THE CABINET.

B-120

Serial No: B120-D0-0019

PLEASE NOTE:

This Operating and Installation Manual should be given to the user. The Operator of the ice machine should be familiar with the functions and operation of the ice machine.
This manual must be kept in a prominent, easily reachable place near the ice machine.

PLEASE NOTE:

Using any parts other than those approved or manufactured by Ískerfi relieves the manufacturer of all warranty and liability.
Ískerfi (Manufacturer) reserves the right to change specifications at any time.

1.2.2 Starting and running the system

Start and stop the machine from the operator interface.

If there is a system with an ice machine and storage tank or automatic ice distribution system it is possible to start the system from the operator interface on the ice machine when both systems are stopped or from the mixing tank.

1.2.3 Adjustment of ice production

The output of B-120 is approx. 38,8 kW (33.000 kcal/h) At 1500 l/h gives 30% ice concentration with 0°C seawater input temperature.

The saltwater flow through the ice machine is regulated with two manual adjustable valves on the front side of the ice machine. With increased flow the ice concentration through the machine is lower, and is higher with reduced flow.

The flow volume is read on each flowmeter under the manual valves or on the operator interface.

The minimum total flow through the ice machine is 850 l/h. *understand the ice machine cuts out at 850 l/h or less.*

2. Installation

2.1 General

When preparing the system for installation at a location, the latest International, National or Local Requirements should be adhered to. The main TDS cabinet must be installed on wall at good place free from water and washing process.

2.2 Electrical connection information

When the system and components are installed they must be electrically grounded in accordance with local codes and with IEC/CEE requirements.

The electrical installation including the service connection must comply with local codes and with IEC/CEE requirements. The Installation must undergo a complete electrical check before operating the system.

- User information -

- Liquid Ice™ for storage of fresh fish in fish tubs -

These instructions are written as basic information for usage of Liquid Ice to store fresh fish in tubs or boxes with drained circumstances.

Liquid Ice has been used with good results for storage of fresh fish on-board fishing vessels for some time now. The benefits noticed compared to usage of conventional ice are mostly better appearance, whiter flesh, firmer flesh, higher process yield and longer shelf life.

Although Liquid Ice has shown excellent results when storing fresh fish, workmanship is very important to deliver top quality raw material. The ice quantity put in each tub has to be sufficient to chill the fish down to desired storage temperature while maintaining that temperature until the raw-material is processed further. Therefore, when methods of storing the raw material are changed everyone should reckon some time to adjust the new method.

Following are a few notes Iskerfi hf. recommends as normal procedures when preparing fresh fish for storage in Liquid Ice.

1. Liquid Ice™:

Liquid Ice can be described as microparticles of ice in liquid form. Liquid Ice can be produced with variable ice fraction from 10 to 40% of volume. Liquid Ice used for storage of fresh fish in tubs is usually around 35%, which can, for example be produced from a B-120 with a pre-cooler at 1400 Liter/hour. When checking Liquid Ice for thickness it is very good to have a basket with mesh around 1 cm². If the ice basket can be filled with ice and very little ice seeps through the holes the thickness is good.

2. The Distribution System:

The employees of Iskerfi have designed the distribution system with the assistance of Fishermen who have been using the system. The goal behind the design was to have a system that is simple to use, highly efficient and dependable.

The system is simple to use - before the system is used the pump switch is set to **auto**, after that all you have to do is open the valve on the hose when ice is required and close the valve after each use. It is strongly advised to have the valves either closed or fully open.

The system can deliver around 4000 liters of Liquid Ice per hour, which we have found to be adequate.

3. The tubs:

Liquid Ice can be used in all fish tubs and boxes, Iskerfi recommends using tubs with open drain holes in the bottom. Iskerfi has not tested storage in tubs without drain holes for more than very short storage time, 1 to 3 days. As for any other handling of food it is important that the tubs and boxes are clean and undamaged.



4. Alignment and icing:

- To guarantee best results with the usage of Liquid Ice it is recommended to align bled and gutted whitefish belly down. When the first layer of fish is aligned in the tub, pump ice over it until ice is quite well visible in the whole layer. It is not recommended to move the hose quickly and roughly over the area, rather pump the ice between the fish in few places. Notice that when there is enough of ice the fish will start to float in the ice and you can see ice coming from under the fish.
- One good rule is, when the flow is stopped Liquid Ice should be seen over the whole layer. In the beginning it is better to use substantially more while people are getting familiar with a new technique.
- After the first layer has been iced the next layer can be aligned and it can be iced in the same way as the first one. Again we advise little movement of the hose. Quantity of ice should be such that ice is clearly seen on top of the layer.
- When the tub has been filled layer by layer it should be topped very well over with Liquid Ice. It is possible that you have to add a little of ice later, depending on circumstances. It can also be good to fill 2 to 6 tubs at each time, that way each tub will be filled one or two layers at a time and then move on to the next tub. This way filling each tub takes a little bit longer time and more ice seems to be left in each tub. When redfish is iced mostly what was said above applies but the fish is usually not aligned formatively in the tubs.
- It can sometimes be difficult to get the ice to stop in the tubs, if this is the case it can be good to put the end of the delivery hose down between the fish and see how the Liquid Ice performs then.



5. To look at:

- Alignment in the tubs is very important, because bad aligning can stop the draining process. If the tubs do not drain properly water accumulated between fish can harm fish quality.
- If the Liquid Ice is not thick enough it is possible to stop the agitator in the tank for up to 2 minutes, then drain the tank not more than 20% of tank volume. After draining start the agitator again and thick ice should be available for usage. It is recommended that personnel fully trained to operate the system should only do this.
- On occasion Liquid Ice flows quite quickly out through the drain holes on the tubs. This can happen if the ice concentration is too low. To fight this problem it is good to put the end of the hose between the fish and see if the ice starts to pile up in the tub. It can also be advisable to drain the tank as described earlier.
- Liquid Ice is a powerful coolant that is produced from seawater; it ensures rapid chilling and low storage temperature. Fish stored in Liquid Ice under correct conditions, ambient temperature around 1°C and enough of ice, will have storage temperature around -0.7°C.

Precooler

FK-50

Serial No: FSK-50-A1- 007
(Drawings FSK-50_R03_400)

PLEASE NOTE:

This Operating and Installation Manual should be given to the user. The Operator of the precooler should be familiar with the functions and operation of the precooler.

This manual must be kept in a prominent, easily reachable location near the precooler.

PLEASE NOTE:

Using any parts other than those approved or manufactured by Ískerfi relieves the manufacturer of all warranty and liability.

Ískerfi (Manufacturer) reserves the right to change specifications at any time.

Ice-tank

3200

(Drawings HB-625_R50_400)

PLEASE NOTE:

This Operating and Installation Manual should be given to the user. The Operator of the system should be familiar with the functions and operation of the ice-tank.

This manual must be kept in a prominent, easily reachable location near the pre-cooler.

PLEASE NOTE:

Using any parts other than those approved or manufactured by Ískerfi relieves the manufacturer of all warranty and liability.

Ískerfi (Manufacturer) reserves the right to change specifications at any time.

1.1 Ice-tank 3200 I. Technical specification

Ice-tank 3200I, overall size LxWxH:	2850x1440x1600 mm
Power for cabinet	(3 x 400v 50Hz) or 3x 460v 60Hz)
Power consumption at 3x 460v 60 Hz	3,1 kW
Motor ice pump	1,3 kW
Motor for mixer	1,8kW
Display	Simens Simatic S7
CPU modul	Simens 224
Analog Modul	Simens EM231
230v Power modul	Simens SITOP Power 2

1.2 Component function

1.2.1 System controls

The Control cabinet for the ice machine controls the compressor, generators, and all other electrical parts on the machine. The condenser water pump can also be controlled from this cabinet as well as the start of the precooler.

If there is a storage tank then there is also a separate control panel, which is mounted on the wall beside the storage tank. From this panel the control of the mixing unit in the tank and the ice-pump is controlled. Also from here the start and stop of the ice machine is controlled depending on the level in the storage tank.



If the control cabinet is opened, electric conductors at dangerous voltage levels are exposed. Only a qualified electrician should open the control cabinet and perform necessary maintenance.

BE SURE TO TURN THE MAIN SWITCH OFF AND DISCONNECT THE UNIT FROM THE MAINS SUPPLY BEFORE OPENING THE CABINET.

1.2.2 Starting and running the system

Start and stop the machine from the operator interface.

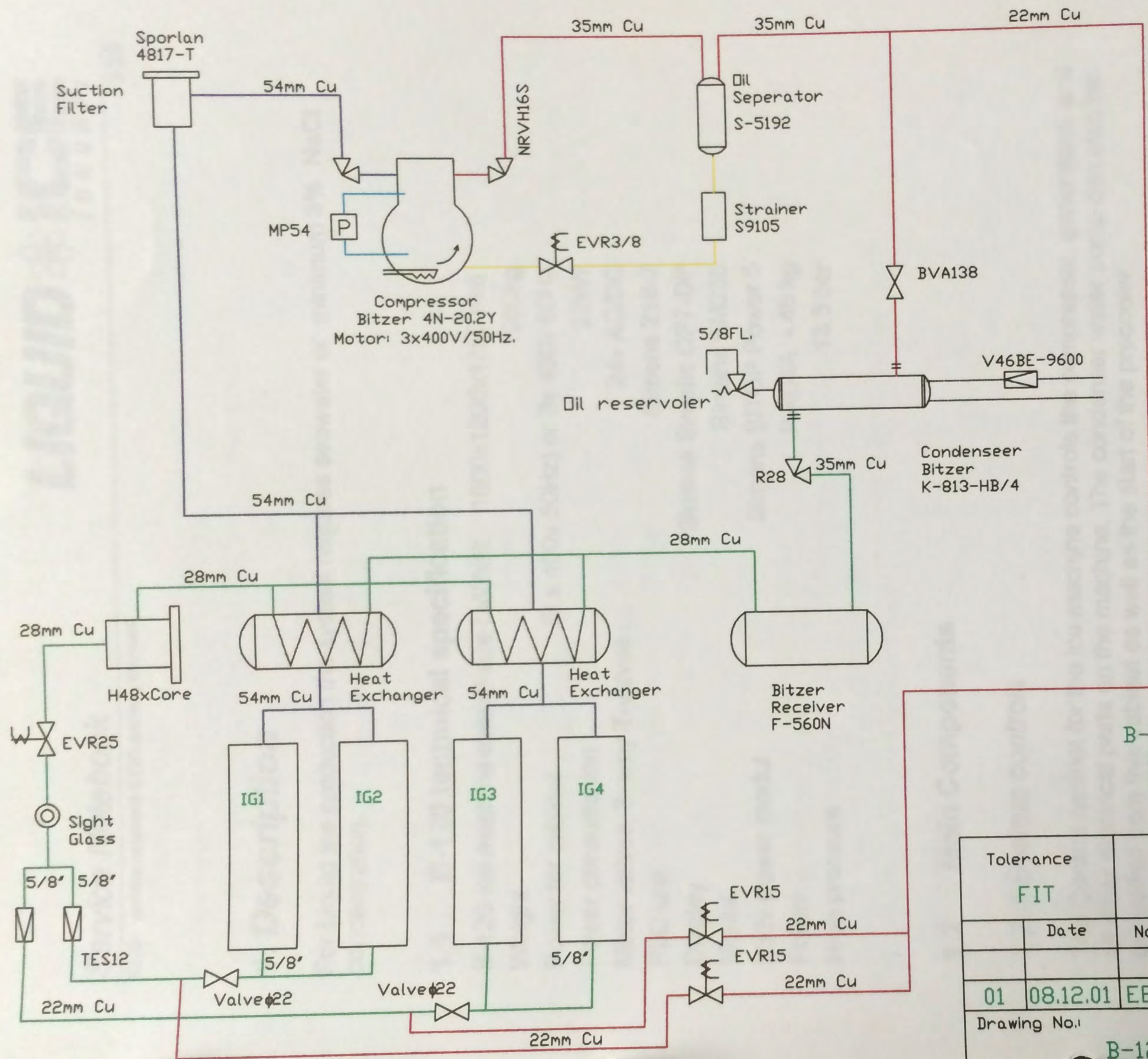
If there is a system with an ice machine and storage tank or automatic distribution system it is possible to start the system from the operator interface on the ice machine when both systems are stopped or from the mixer

ISKERFI HF
Skútahraun 2
220 Hafnarfjörður
Sími: +354 555 6400
Fax: +354 555 6401
e-mail:liquid-ice@liquid-ice.is

Liquid ice machine B-120

Service Notebook

Serial No: B120-D0-0019



B-120 Liquid-Ice Machine
Refrigerant diagram
Cooling medi: R-404A

Tolerance		Scale	
FIT		FIT	
Date		File:	
01	08.12.01	B-120_rev01	
Name		Name:	
EE		B-120 Refrigerant diagram	
Drawing No.:			
B-120_01_081201			

1. Description

For Liquid Ice production the system requires seawater or minimum 3% NaCl concentration.

1.1 B-120 technical specification

B-120 ice machine overall size LxWxH:	1600x1200x1750 mm
Weight	1000kg
Power for cabinet	(3 x 400v 50Hz) or 3x 460v 60Hz
Power consumption	22kW
Motor valves, 3- way T-valves	24v AC/DC
PLC unit	Simens 216-2
Display	Simens Simatic OP7-DP
Modul	Simens EM235
230v Power modul	Simens SITOP Power 5
Freon	R-404A - 48 kg
High pressure	13,5 bar

1.2 Main Components

1.2.1 System controls

The Control cabinet for the ice machine controls the compressor, generators, and all other electrical parts on the machine. The condenser water pump can also be controlled from this cabinet as well as the start of the precooler.

If there is a storage tank then there is also a separate control panel, which is mounted on the wall beside the storage tank. From this panel the control of the mixing unit in the tank and the ice-pump is controlled. Also from here the start and stop of the ice machine is controlled depending on the level in the storage tank.



If the control cabinet is opened, electric conductors at dangerous voltage levels are exposed. Only a qualified electrician should open the control cabinet and perform necessary maintenance.

BE SURE TO TURN THE MAIN SWITCH OFF AND DISCONNECT THE UNIT FROM THE MAINS SUPPLY BEFORE OPENING THE CABINET.

B120 service notebook-B120.doc/eng © Ískerfi

1.2.2 Cooling system

The precooler has two compressors CP1.

CP1: Bitzer compressor type 6H-25.2Y (See Encl. A1)

1.2.3 Condenser

Bitzer condenser Type K 13 53 TB.

Refrigerant side

Volume 37 litres

Maximum operating temperature 120°C

Maximum operating pressure 28 bar

Coolant side (Seawater side)

Volume 11,5 liters

Maximum operating temperature 85°C

Maximum operating pressure 10 bar

(See encl. A2)

1.2.4 Oil Separator

AC&R Type S-5692

450 psi Max. W.P. (31,05 kPa)

Conforms to ANSI / UL 207 or AMSE CODE, SECTION VIII 9933

(See encl. A3)

1.2.5 Liquid Reciver

Bitzer Type F 562N

M.W.P. 28 bar

Test 41 bar

In volume 56 litres

Max Temperature : +120 CENT.

(See encl. A4)

1.2.6 Freon Filter Drier

ALCO Type: ADKS-PLUS 489-TS-7065

PNC 80 4009 Filter Drier Shell

M.W.P. 35 bar

In volume 2,1litres

Temperature Range: -450/ +65 CENT.

(See encl. A5)

1.2.7 Pressure Relief Valve

Henry Type 527-E

Pressure setting BAR: 24,2 bar , installed on condenser and Liquid reciever.

Capacity rating 12,70 Kilograms af air per minute

(See encl. A6)

2. Maintenance

The Liquid ice machine has been designed to be simple and easy to maintain. To ensure reliable operation it is essential that maintenance instructions are followed closely.

2.1 Electrical connection information

When the precoolers are installed they must be electrically grounded in accordance with local codes and with IEC/CEE requirements. Always turn the Safety Switch OFF when working on electrical connections.

The electrical installation including the service connection must comply with local codes and with IEC/CEE requirements. The Installation must undergo a complete electrical check before operating the precooler.

PLEASE NOTE:

During the warranty period, there may be restrictions on maintenance performed by the customer without voiding the warranty. Please refer to the warranty terms about this.

It is required that the Liquid ice machine is regularly inspected for proper functioning. The frequency of inspections is dependent on the precooler usage, however it should be performed at least once a year.

3. OTHER INFORMATION

OIL ON PRECOOLER:

BSE 32 SYNTHETIC REFRIGERANT OIL.

FREON:

R404A 48 kg

HP:

12,5 – 13,5 BAR

LP: Variable, cut out ca. 1,5 Bar.