



**CUBE ICEMAKER MODELS
SX180 & SX230**

**INSTALLATION
AND
SERVICE MANUAL**

Revision 1

STUART MANUFACTURING

1 Jayelem Crescent

Padstow NSW 2211 Australia

Telephone (02) 9773 3711

Fax (02) 9773 4400

www.icemachines.com.au

WARRANTY CLAIM GUIDELINES

Model SX180 & SX230

As from January 1st 2020 all STUART SX ICEMAKERS will carry a standard two years warranty. This covers two years labour, two years on parts and two years on compressor failure, provided warranty conditions are met and installation is in accordance with published standards.

All dates are from the original date of installation. This date is assumed to be a maximum of eight (8) weeks from the date of invoice to the dealer.

Warranty claims are conditional on the following:

- (1) All claims for labour or parts must be made through the original reseller.
- (2) The defective part must be returned with the service invoice to STUART MANUFACTURING, freight pre-paid, within 15 days of date of service. Details of End User, Model, Serial Number and Date of Installation of the product must be provided with the claim.
- (3) All replacement parts must be detailed and be approved STUART parts.
- (4) All labour only claims must be explained in sufficient detail on the service invoice to properly identify the nature of the failure.
- (5) The labour warranty includes standard straight time charges at the installation location only and does not include charges for travelling time, mileage or other premium charges.
- (6) When consumables such as driers, refrigerant etc. are supplied by the service agent, the cost allowed will be the Refrigeration Wholesalers list price only.
- (7) If a compressor is faulty and requires replacement, the service agent MUST contact Stuart Manufacturing before obtaining a replacement.

The warranty will not apply in the following circumstances:

- (1) When any part, assembly or ice machine:
 - (a) has been altered, modified or changed
 - (b) has been subject to misuse, neglect or accident
 - (c) where the serial number or other identification has been removed or altered.
- (2) When the product has been installed and or maintained in a manner inconsistent with the approved procedure or STUART technical publications.
- (3) The two years compressor warranty will not apply where the refrigeration system has been modified with a condenser, heat reclaim device or part or assembly not approved by STUART MANUFACTURING.

GENERAL

As from 1st January, 2020 the following warranty will apply to all spare parts:

- (a) Replacement parts exchanged while the original equipment is still under manufacturers warranty will be covered on a pro-rata basis up to the warranty expiration of equipment in which they are installed.
- (b) Warranty on spare parts other than the above is three (3) months from the date of installation as evidenced by suitable documentation or eight (8) weeks from the invoice date of sale to the dealer.

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SPECIFICATIONS

MODEL	SX180	SX230
ELECTRICAL	240 volts	240 volts
	50 hz	50 hz
	5.0 amps	7.2amps
REFRIGERANT	R404A	R404A
SUCTION PRESSURE @ 32° C FLOODED EVAP.	232kpa	232kpa
FAN CONTROL		
Cut In	1660	1660
Cut Out	1240	1240
WATER PRESSURE	All Models	Minimum: 140 kpa Maximum: 350 kpa
OPERATING TEMPERATURE	All Models	Minimum: 1° Celsius Maximum: 43° Celsius
WATER SUPPLY	All Models	3/4" BSP male stop cock
DRAINAGE	All Models	25mm diameter PVC
ICE WEIGHT (Factory default)	SX180	SX230
	1600g	2100g

Continuing product improvement may necessitate changes of specifications without notice.

MANUFACTURER'S LIMITED LABOUR AND PARTS WARRANTY

STUART COMMERCIAL ICEMAKERS

Model SX180 & SX230

CERISUN PTY. LTD. trading as STUART MANUFACTURING at 1 JAYELEM CRESCENT PADSTOW warrants to the original owner/user that any STUART SX commercial icemaker supplied on or after January 1st 2020 shall be free of defects in material or workmanship under normal and proper use and maintenance service as specified by STUART MANUFACTURING and upon proper installation and start-up in accordance with the instruction manual supplied with the Product.

The obligation under this warranty is limited to:

- (1) associated and approved labour costs for a period of two years after the date of original installation;
- (2) the repair and or replacement of parts or assemblies that in the opinion of STUART MANUFACTURING are defective, for a period of two years after the date of original installation;
- (3) the supply or repair of the electronic control board(s) for a period of two years after the date of original installation.

The labour warranty shall include straight time labour charges at the product location only and shall exclude charges for travel time, mileage or other premium charges.

ny labour required to fulfil the warranty obligation must be performed by a refrigeration service company qualified and accepted by STUART MANUFACTURING.

This warranty does not include parts or labour coverage for components failure or other damage resulting from:

- * external electrical power failure or miswiring to the Product for any reason
- * external water supply failure or plumbing problems to the Product for any reason
- * external drain line malfunction
- * adverse operating conditions as set forth in the owner/user manual for the Product.

All claims for labour or parts must be made through the original reseller. The defective part for which reimbursement is claimed, together with the service invoice, must be returned to STUART MANUFACTURING, freight pre-paid, within fifteen days from date of service to be eligible for labour and parts warranty coverage. All replacement parts must be approved STUART parts.

Incidents of failure that do not require the replacement of a part shall be explained in sufficient detail on the service invoice to

identify the failure. All claims shall include the product model number, serial number, original date of installation and customer identification.

The foregoing warranty shall not apply to:

- (1) Faults caused by dirty water distribution systems or icemaking plates
- (2) Adjustments to ice thickness caused by incorrect installation.
- (3) any part or assembly
 - (a) that has been altered, modified or changed
 - (b) that has been subjected to misuse, abuse, neglect or accidents or
 - (c) any Product or part on which the serial or model number has been removed or altered
- (4) any Product that has been installed and/or maintained inconsistent with STUART technical publications
- (5) any product that has been installed or is located outside Australia.

The two years compressor parts warranty shall not apply when the Product's refrigeration system is modified with a condenser, heat reclaim device, or parts and assemblies other than those supplied by STUART MANUFACTURING unless STUART

MANUFACTURING has accepted modification for specific installation in writing.

STUART MANUFACTURING assumes no liability for misuse or inadequate maintenance of the Product.

In no event shall the owner/user be entitled to recover incidental or consequential damages, including but not limited to damages for inconvenience, ice purchase, rental or replacement equipment, loss of profits or other commercial loss.

Warranties stated above are the only warranties made in connection with the sale and distribution of the Products.

ANY AND ALL OTHER EXPRESSED, STATUTORY AND IMPLIED WARRANTIES APPLICABLE TO THE PRODUCT,

INCLUDING, WITHOUT LIMITATIONS, ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE ARE EXPRESSLY DISCLAIMED.

The warranty information set forth above shall be governed by and construed in accordance with the laws of the state of NSW and, if applicable the laws of Australia. The labour warranty, as stated is extended only to the original owner/user and is not assignable to any other owner or user.

PARTS LIST

DESCRIPTION	SX180	SX230
Compressor	050654	SX 1015
Fan/motor assy.	050348	050348
Fan control	SX 1014	SX 1014
HP switch	050870	050870
Curtain	SX 1008	SX 1009
Evaporator Assembly	SX 1010	SX 1011
Solenoid valve - water in	SX 1006	SX 1006
Solenoid valve - water dump	SX 1007	SX 1007
Solenoid valve - hot gas	SX 1005	SX 1005
TX valve	SX 1012	SX 1013
Control board	050844P	050844P
Display board	050845	050845
Fuse - 2 amp	050871	050871
Switch - bin full	SX 1003	SX 1003
Probe - ice thickness	SX 1004	SX 1004
Pump - water	SX 1002	SX 1002

INSTALLATION INSTRUCTIONS

LOCATION

1. Must be well ventilated and weather-proof. Allow a minimum of 250mm above icemaker for correct ventilation.
2. Machine must be installed on hard surface and LEVEL.
3. 3/4" BSP male stop cock required on potable water supply.
The non-return valve supplied with each machine MUST be installed at the supply cock.
Incoming water temperature affects ice production. Therefore, avoid above ground plumbing and pipes exposed to direct sunlight.
4. If water pressure is over 350kpa, a pressure reduction valve must be fitted.
5. Make sure drain hoses have no kinks and have a fall to drainage point.
6. Each icemaker should have it's own power circuit. Do not share with other equipment.

START-UP PROCEDURE

1. ENSURE MACHINE IS LEVEL
2. Connect non return valve to tap, then water hose between valve and icemaker and turn on water.
Note! Non return valve must always be fitted at the water supply point.
3. Remove front and side panels.
4. Turn on power.
5. Wait until the water trough fills and the inlet valve closes, then press and hold the RESET button for about 3 seconds. The machine should now be in normal icemaking mode. **No. 2**
i.e. the compressor and water pump should both be running.
6. Allow machine to complete two (2) cycles before making any adjustments (see Page 3).
7. Replace all panels.

NOTE: On some models the top ice cubes may be slightly thinner than the bottom ice cubes. This is quite normal.

OPERATION OF MACHINE

DISPLAY

- 0 Power up self-test
- 1 Power up defrost cycle
- 2 Normal Ice make cycle
- 3 Didn't fill with water in time
- 4 Didn't make ice in time
- 5 Didn't defrost in time
- 6 Cleaning cycle is in operation
- 7 Ice Bin is Full
- 8 Service is required
- 9 High pressure fault

NOTE: All buttons on the display panel have a built in three (3) second delay. i.e. each button must be depressed for three (3) seconds before the function will be activated.

When the power is first turned on 0 will briefly appear in the window and then a number is displayed.

This number indicates the version number on the control board

i.e. #2 would indicate version 2

The machine will then go to No. 1 warm up cycle.

WARM UP CYCLE 1

In this mode the compressor is on, hot gas valve open, water pump and fill solenoid off.

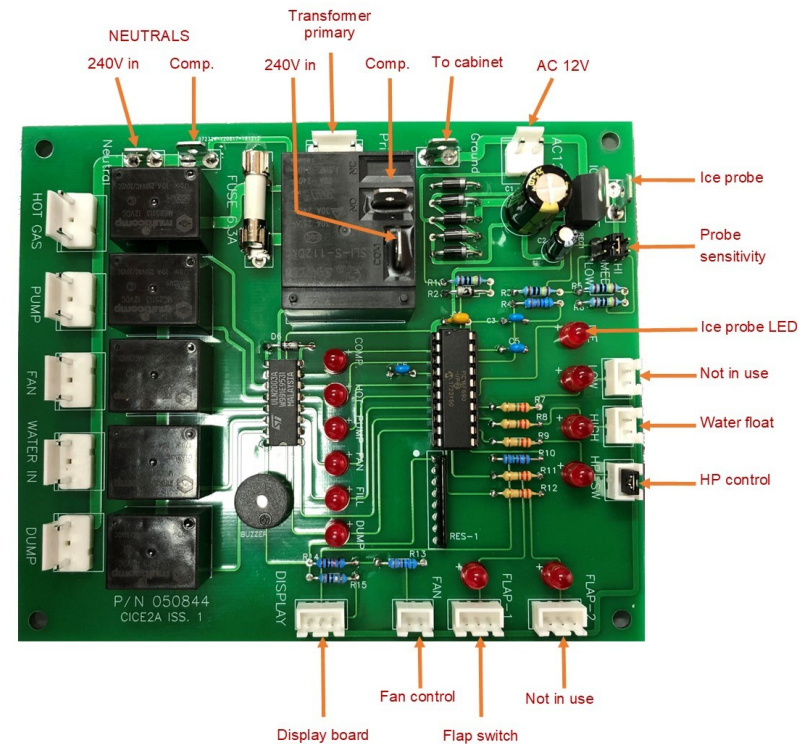
The compressor will run for two (2) minutes and will then switch off.

The pump will start and run for a further three (3) minutes.

At the end of this period the machine will automatically switch to the ICE MAKE CYCLE 2

On initial start up the warm-up cycle can be bypassed by pushing the reset button for three (3) seconds.

ICE PROBE BOARD COMPONENT CONNECTIONS



Wiring harness identification numbers and colour

- | | | |
|-----|--------|----------------------|
| 1. | Brown | HOT GAS SOLENOID |
| 2. | Red | WATER PUMP |
| 3. | Orange | FAN MOTOR |
| 4. | Yellow | WATER INLET SOLENOID |
| 5. | Green | DUMP SOLENOID |
| 6. | Blue | FAN CONTROL |
| 7. | Purple | FLAP 1 |
| 8. | Grey | HP CONTROL |
| 9. | White | HIGH FLOAT |
| 10. | | ICE THICKNESS PROBE |

Note 1.

Self Test Procedure. 0 is momentarily displayed

Fail = 0 continually displayed.

Pass = Buzzer beeps once and a number is displayed indicating the version number of the controller.

Note 2.

Number 1 displayed

The hot gas solenoid is always opened for 15 seconds before starting the compressor, this allows the gas pressures to equalise before the compressor starts.

Note 3.

Pushing the reset button during the initial start up period will cancel the defrost and place the machine in normal ice making mode.

Note 4.

Bin Full is indicated when the water curtain remains open after an ice drop.

Note 5.

The correct quantity of water during fill cycle is controlled by the float switch.

When the water fills and activates the float switch the fill solenoid will close.

As ice is formed the water level will fall and the float switch will open the fill solenoid allowing more water into the trough until the float switch is activated again, closing the fill solenoid. This occurs periodically until the correct ice thickness is achieved

Note 6.

The clean timer is set for 3,000 hours, this timer is reset when the manual clean cycle is activated.

WHY A WARM UP CYCLE?

The warm up cycle has been designed in the software to protect the machine from damage in the event of a power failure during the freezing cycle.

By using the WARM UP (defrost) CYCLE when power is restored, any ice which had formed on the icemaking plate before the power failure will be fully removed before the ICE MAKE CYCLE recommences.

ICE MAKE CYCLE 2

The display will remain this way during the whole of the icemaking cycle until:

a) the ice storage bin is full, at which time the number 7 is displayed.

As soon as ice is removed from the storage bin, allowing the flap to close, the machine will go back to the start of the ICE MAKE CYCLE.

NOTE: The machine will only go into the ICE BIN FULL MODE after a defrost and flap must be closed before it will return to the ICE MAKE CYCLE.

(b) an error occurs, the fault number is displayed and flashes and the alarm sounds.

After a fault has been rectified, press the reset button to return the machine to the ICE MAKE CYCLE

ADJUSTMENTS

There is only one (1) adjustment which can be made to the machine, Ice Thickness.

ICE THICKNESS SETTING

The correct weight of ice per cycle has been factory set with the machine LEVEL.

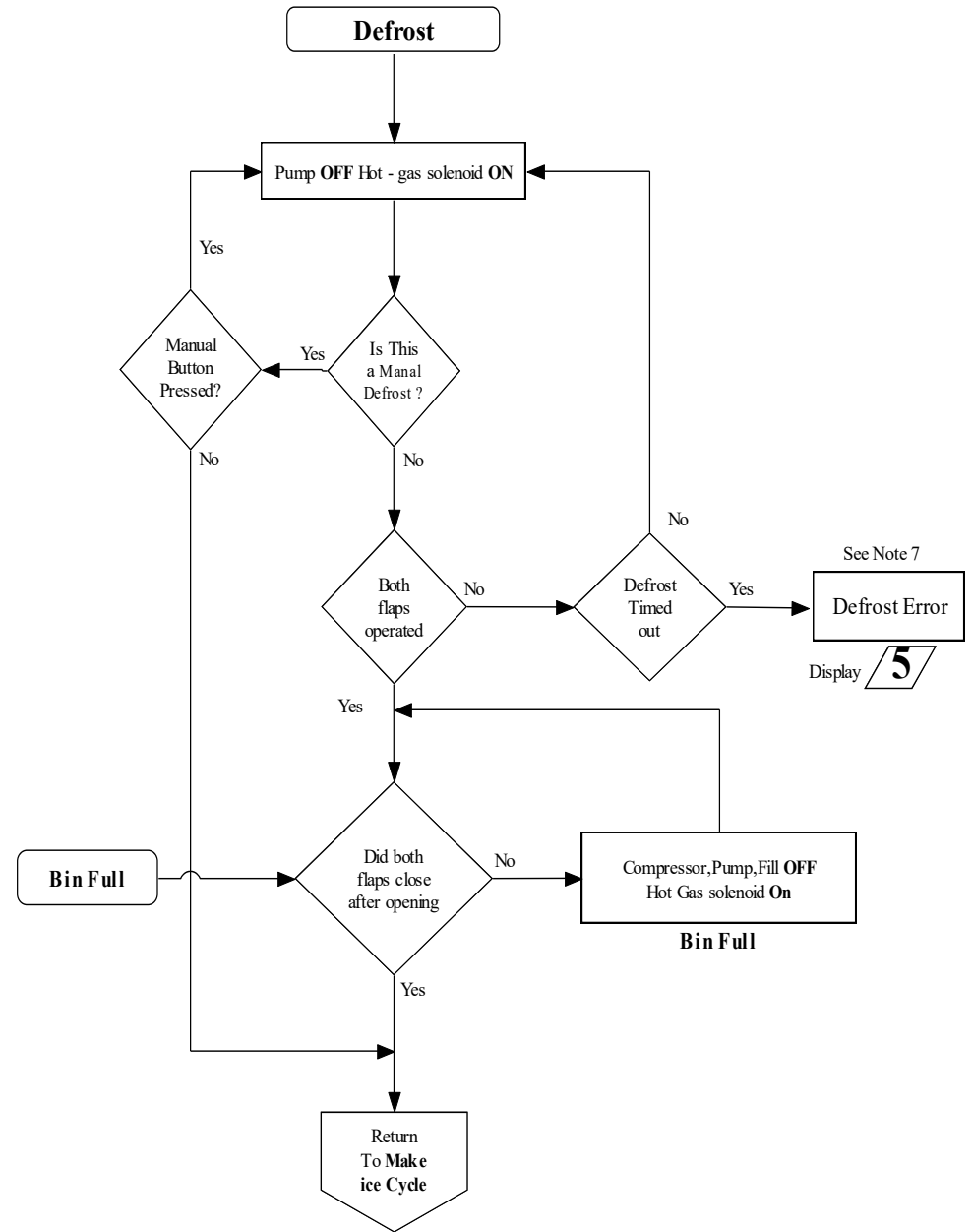
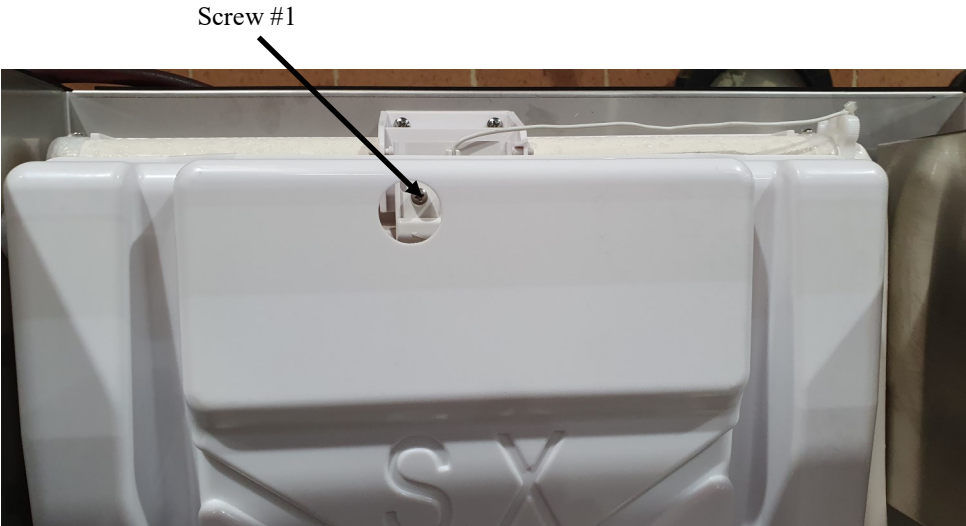
NOTE: Refer to specification chart on page 1 for correct ice weights.

Adjustments are made by turning the Philips head screw #1 clockwise or anti-clockwise.

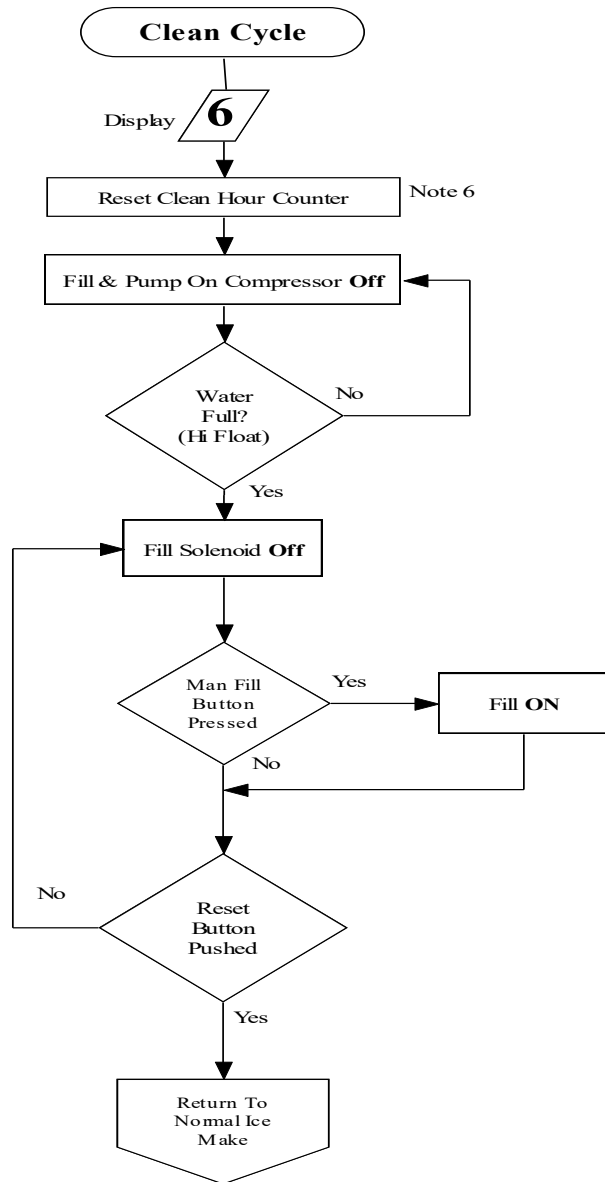
To make the ice thicker i.e. **heavier**, turn the screw **clockwise**.

To make the ice thinner i.e. **lighter**, turn the screw **anti-clockwise**.

When making any adjustments, it is recommended that you only turn the screw quarter to half turn each time.



BIN FULL and DEFROST Processing



Clean Cycle Processing

ERROR CODES

There are four (4) error codes in the software

- 3** Did not fill with water in time
- 4** Did not make ice in time
- 5** Did not defrost in time
- 9** High pressure fault

NOTE!

If an error 3 occurs, the machine will attempt to fill every hour until the water supply is restored. Therefore, if the water supply is interrupted after-hours, the machine may be functioning normally the next morning and the only evidence of a problem may be a shortage of ice in the bin. If this becomes a regular occurrence, then the cause of the interruption should be rectified.

For more detailed information on the operation of the machine, refer to the OPERATIONAL FLOW CHARTS on pages 13 to 15.

8 SERVICE MODE

After 3000 hours of ice making time there will be 10 beeps and number 8 will flash 10 times indicating that the machine requires servicing. This will occur every hour until the machine has been put through a clean cycle. Once the clean cycle has been carried out the counter is zeroed and the machine starts counting the hours again. Note: Ice making time does not include bin full time.

TROUBLE SHOOTING

MICROPROCESSOR DIAGNOSTICS

The 3rd generation control board has a non volatile memory which stores a fault history for the icemaker, plus other diagnostics such as total machine running hours, number of cleaning cycles performed and number of icemaking cycles.

ACCESSING DIAGNOSTIC DISPLAY

While the machine is in the normal ice make cycle 2 (i.e. compressor and pump are running) Press and hold the **RESET** button, after 3 seconds the display shows a dash –

Release the RESET button, display flashes 0. To change the number, press the **MANUAL DEFROST** button until the desired diagnostic parameter is displayed

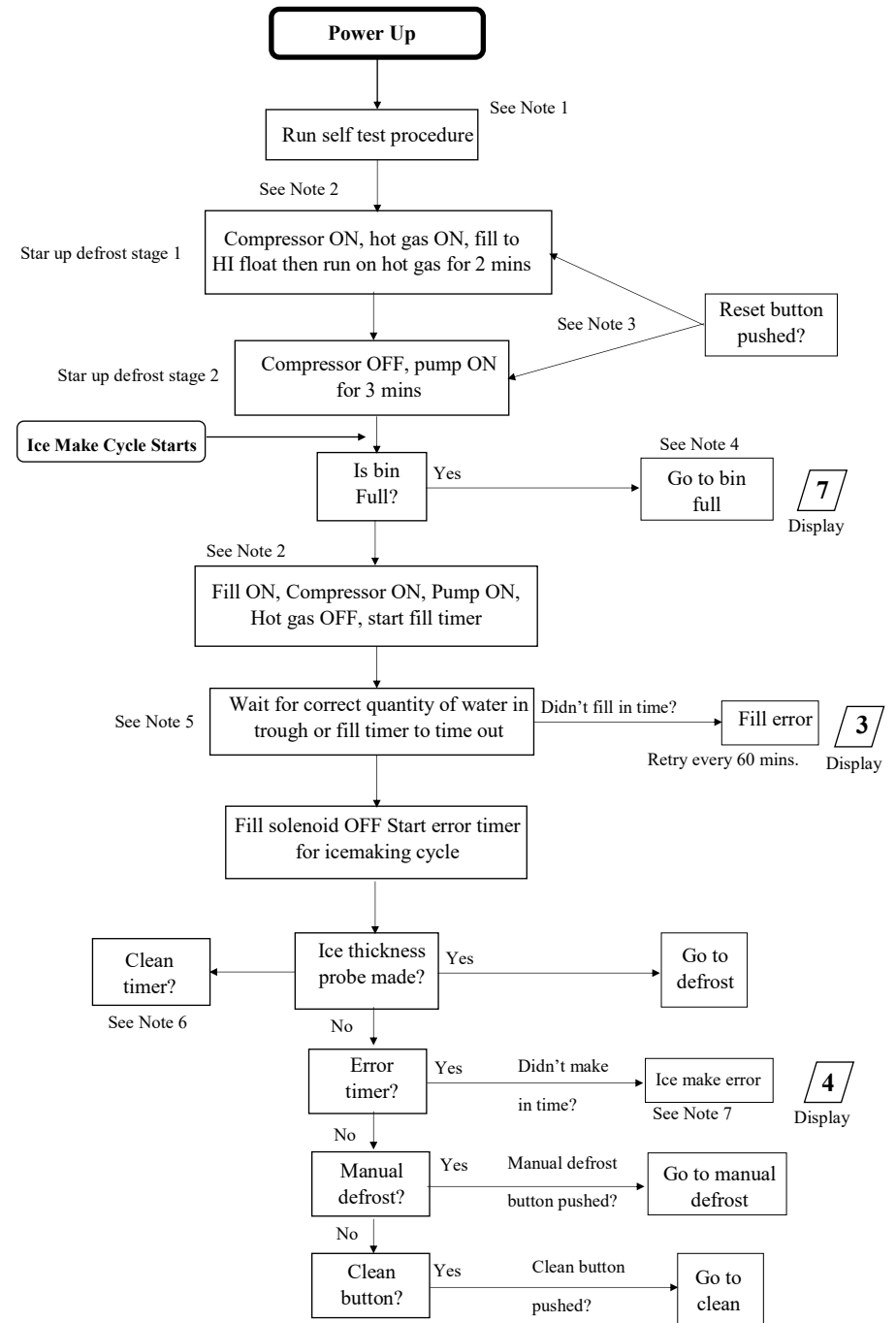
Available parameters are:

- 0 Access last five faults
- 1 Number of hours since machine was last cleaned
- 2 Number of cleaning cycles performed
- 3 Number of ice harvests

Once the desired diagnostic number has been selected, press and hold the **RESET** button (to confirm selection) the display will change to a dash –

Release the **RESET** button, display now shows the selected parameter

To return to normal ice making mode, press and hold **RESET** button until display shows a dash –



If the clean cycle is not manually terminated by pressing the RESET button the machine will automatically terminate the cycle to prevent leaving the clean solution in the machine for an excessive time.

If the power is switched OFF during a clean cycle an automatic clean flush is performed when the machine is next turned on, this ensures no cleaning solution is left in the machine before making ice. During this cycle the display flashes 6

Whilst the clean cycle is running vacuum or blow out condenser ensuring dust does not contaminate the surrounding area.

Wipe out Compressor section removing dust and grime around fan motor. Spin fan and check for noisy bearings.

Dismantle water distributor and clean with bottle brush taking note that all water holes are clean and unobstructed. Reassemble and refit distributor.

Sanitize storage bin as per manufacturers specifications.

Start machine & check to ensure control board light operates when curtain switch is activated.

After second ice drop check thickness and adjust if required. (See Page 3)

Replace machine panels.

Clean down all external surfaces.

Replace ice in storage bin.

Note: Using none-approved cleaning medium may void ice making plate warranty

ERROR 3 DID NOT FILL WITH WATER IN TIME (3 Minutes)

If the water level float does not see a high-water level within 3 minutes of calling for water the machine will stop, indicate No3 and beep 3 times every couple of minutes. This is the only fault that will try to restart every hour until the water is reinstated. If the reset button is pressed the machine will try to restart.

Possible causes

- (1) Water supply turned off
- (2) Water supply line restricted or frozen
- (3) Blocked strainer in water solenoid
- (4) Faulty water solenoid
- (5) Faulty water float switch

ERROR 4 DID NOT MAKE ICE IN TIME (40 Minutes)

If the ice thickness probe does not sense ice within 40 minutes from the beginning of the ice making cycle the machine will shut down and indicate No4 and beep 4 times every couple of minutes. The machine can be restarted by pressing the reset button or turning the power off and on at the power point.

Possible causes

- (1) Partial loss of refrigerant
- (2) Faulty fan motor
- (3) Dirty condenser
- (4) Faulty compressor
- (5) Hot gas solenoid stuck open
- (6) Faulty expansion valve
- (7) Faulty water pump
- (8) Faulty water float switch

ERROR 5 DID NOT DEFROST IN TIME (7 Minutes)

If the water curtain switch does not send a signal that harvest is completed after 7 minutes the machine will shut down, indicate No 5 and beep 5 times every couple of minutes. The machine can be restarted by pressing the reset button or turning the power off and on at the power point.

Possible causes

- (1) Faulty hot gas solenoid
- (2) Dirty icemaking plate
- (3) Faulty curtain flap switch
- (4) Partial loss of refrigerant
- (5) Ice too thin - will not open water curtain

ERROR 9 HIGH PRESSURE FAULT

If refrigerant pressure exceeds 3100kpa the machine will shut down and indicate No9

Possible causes

- (1) Dirty condenser
- (2) Failed fan motor
- (3) Faulty pressure sensor
- (4) Faulty compressor
- (5) Very high ambient temperature at location

6

CLEAN CYCLE

A clean cycle can be performed at any time, there is no need to wait 3000 hours but cleaning of the icemaker is recommended on a regular basis, at least every six months.

Turn off water and fit new water filter and purge water supply line.

Empty the remaining ice in storage bin into a clean hygienic sealed receptacle and seal to prevent contamination. (Always dispose of the bottom 20% of ice in bin as it will most likely be dust contaminated).

Remove front, top and side panels, visually check all components are in satisfactory condition and do not require replacement due to mechanical or electrical breakdown.

With the machine in **No. 2** press & hold the clean button until the machine goes into clean mode **No. 6**

Initially the dump valve opens to drain most of the water, after the water has drained the compressor shuts down leaving just the pump running.

If there is ice remaining on the evaporator plate press and hold the MANUAL DEFROST button, the compressor will start with the machine going into defrost. The defrost will continue as long as the button is held in. When the button is released the defrost continues for a further 30 seconds.

Add the required cleaning/sanitising solution. **NOTE! Icemaker cleaner is only recommended in extreme cases.**

Once cleaning is complete, press and hold the RESET button until the display starts to flash **6** indicating the cleaning cycle is finalising.

During this time the dump valve opens to drain the cleaning solution and the water solenoid opens to flush the system with clean water

Once the cycle has completed the machine will return to the normal ice make mode **No. 2**