



CUBE ICEMAKER MODELS
SC130 SC220 SC270 SC500
GENERATION 3 CONTROL BOARD



INSTALLATION
AND
SERVICE MANUAL

Revision 1

STUART MANUFACTURING

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SPECIFICATIONS

MODEL	SC130	SC220	SC270	SC500
ELECTRICAL	240 volts	240 volts	240 volts	240 volts
	50 hz	50 hz	50 hz	50 hz
	5.6 amps	8.6amps	8.6 amps	12.0 amps
REFRIGERATION	R404A	R404A	R404A	R404A
FAN PRESSURE CONTROL	232kpa	232kpa	232kpa	232kpa
WATER	All Models	Minimum: 140 kpa		
OPERATING	All Models	Minimum: 1 degree Celsius		
WATER CONNECTION	All Models	3/4" BSP male stop cock		
DRAINAGE	All Models	25mm diameter PVC		
ICE WEIGHT (Total both slabs)	SC130	SC220	SC270	SC500
	1,500g	2,100g	2,700g	5,400g
PURGE AMOUNT	200ml	300ml	300ml	400ml

INSTALATION INSTRUCTIONS

LOCATION

Note! This icemaker must always be installed in a weatherproof environment

1. All models, allow a minimum of 250mm above for correct ventilation.
2. Machine must be LEVEL.
3. Incoming water temperature affects ice production. Therefore, avoid above ground plumbing and pipes exposed to direct sunlight.
4. Make sure drain hose has no kinks and has a fall to floor waste.
5. If water pressure is over 350kpa, a pressure reduction valve must be fitted.
6. An approved back flow prevention device must be fitted.

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 "Hi float" light is illuminated, then press and hold RESET button for about 5 seconds. The machine should now be in normal icemaking mode. i.e. the compressor and water pump should both be running.
6. Set water purge (see water purge adjustment—Page 4).
7. Allow machine to complete two (2) cycles before making any adjustments (see Page 3).
8. 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

WARM UP CYCLE

In this mode the compressor is on, hot gas valve open, water pump and fill solenoid off. (Defrost cycle) **The compressor will run for two (2) minutes and will then switch off. The pump will start and nothing else will happen for a further three (3) minutes.**

At the end of this period the display will automatically switch to |__| and the ICE MAKE CYCLE will commence

On initial start up the warm-up cycle can be cancelled by pushing the reset button.

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 No. **1** when power is restored, any ice which had formed on the icemaking plates before the power failure will be fully removed before the ICE MAKE CYCLE recommences.

ICE MAKE CYCLE

The machine will remain in the icemaking cycle until:

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

As soon as ice is removed from the storage bin, allowing the flaps 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 both flaps must be closed before it will return to the ICE MAKE CYCLE.

- b) an error occurs and **3, 4, 5 or 9** flashes and the alarm sounds.

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

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** Refrigerant 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 9 to 11.

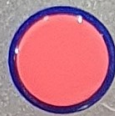
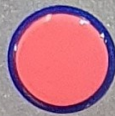


FAULT FINDER

- 1 Start mode
- 1 Normal operation
- 3 Did not fill with water in time
- 4 Did not make ice in time
- 5 Did not defrost in time
- 6 Cleaning mode
- 7 Bin full
- 8 Machine due for service
- 9 Refrigerant high pressure alarm

ICE THICKNESS

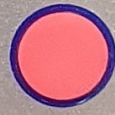
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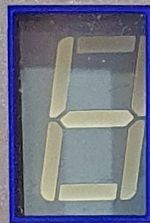
CLEAN



DEFROST



RESET



ADJUSTMENTS

There are only two (2) adjustments which can be made to the machine, Water Purge and Ice Thickness.

WATER PURGE (Parameter 4)

Water purge should be set at approximately 5-10% of the weight of ice per cycle (Check specifications chart on page 1 for recommended amount) As the water purge is time activated, it will vary with water pressure.

The purge drain is at the R/H rear of the icemaker

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

Release the RESET button, display flashes 0. To change the number, press the MANUAL DEFROST button until the number 4 is displayed.

Once the number 4 is displayed, press and hold the RESET button (to confirm selection) and the display will change to **---**

Release the RESET button.

Now press the "CLEAN BUTTON" to cycle through 1 to 0 with 1 being the minimum and 0 being the maximum

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

Note: This function only works during freezing cycle.

ICE THICKNESS

The recommended weight of ice per cycle has been factory set with the machine LEVEL and the correct purge. If the machine is not installed level or there is insufficient purge this can alter the weight of the ice so it is recommended that the purge is set before adjusting the ice weight.

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

Adjustments are made using the **---** and **+** buttons on the front display board

There is a range of 0 to 9 with 0 being the minimum and 9 being the maximum

To make the ice thicker i.e. **heavier**, use the **+** button

To make the ice thinner i.e. **lighter**, use the **-** button

NOTE: All buttons on the control panel have a built in three to five (3-5) second delay except the ice thickness adjustment..

i.e. each button must be depressed for three to five (3-5) seconds before the function will be activated

When the power is first turned on **0** will appear in the window and 1 beep will be heard.

(The beep indicates the version number on the logic board i.e. 1 beep = Version 1) .

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

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 (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
- 4** Purge adjustment

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 adjust the purge press the **CLEAN** BUTTON to cycle through from 0 to 9

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

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
- (6) Blocked water filter
- (7) Faulty water pump
- (8) Faulty water float switch

TROUBLE SHOOTING CONTINUED

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

If the low float does not drop 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

ERROR 5 DID NOT DEFROST IN TIME (7 Minutes)

If both water curtain switches do 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

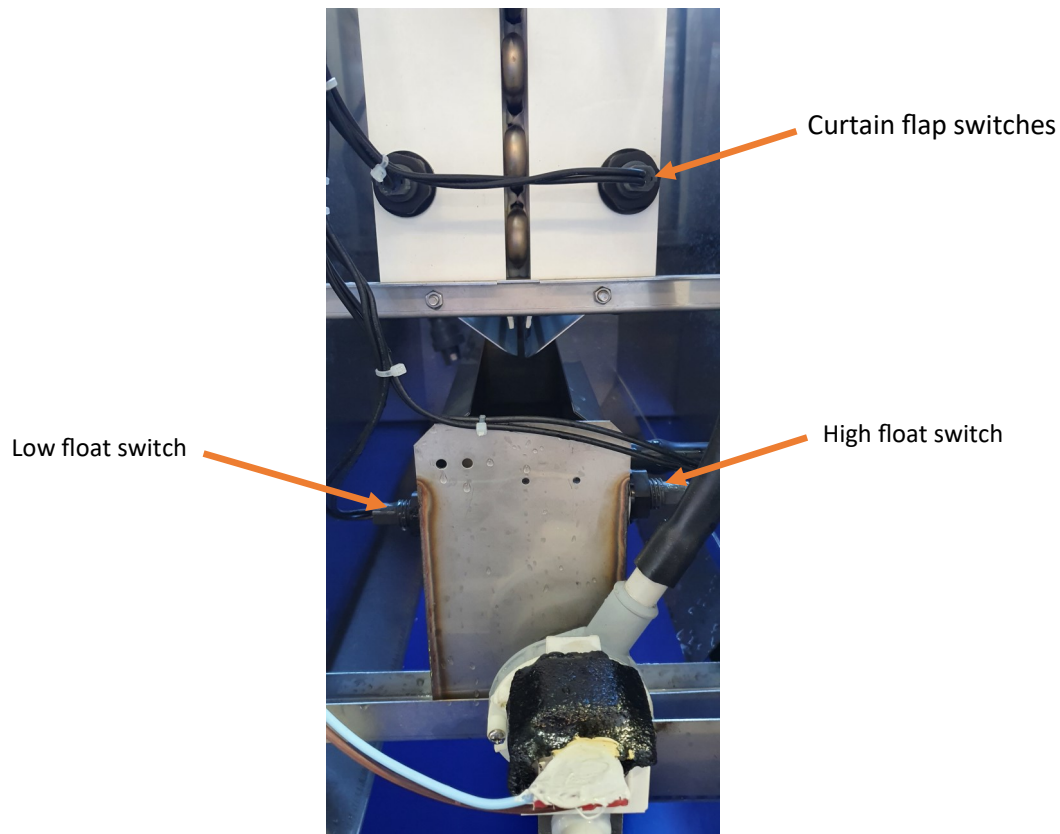
- (1) Faulty hot gas solenoid
- (2) Dirty icemaking plate
- (3) Faulty curtain flap switch
- (4) Partial loss of refrigerant
- (5) Ice too thin - will not open water curtain

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



CHECKING OPERATION OF REED SWITCHES

The curtain flap switches and the high and low floats have indicator (red LED) lights on the main control board. To check the operation of these switches, set the machine in the WARM UP CYCLE with no water in the water trough.

CURTAIN FLAP SWITCHES

By moving the water curtains, the lights marked FLAP 1 and FLAP 2 should be **on when the curtain is closed** and **off when the curtain is about 10 to 15mm open**.

LOW FLOAT

With the **low float** all the way **down**, the indicator **light should be off**, but by moving the **float up** the indicator **light should come on**.

NOTE: If the reverse is happening, rotate the whole float switch assembly 180degrees

HIGH FLOAT

With the **high float** in **down** position, the **light should be off**, but by moving the **float up**, the **light should come on**.

NOTE: If the reverse is happening, rotate the whole float switch assembly 180degrees

ELECTRONIC CONTROL BOARD FUSE - MAIN CONTROL BOARD

The main control board is protected by a fuse. If this fuse should blow it will isolate the whole machine. The correct replacement fuse is a slow blow 3.15 amp HRC Ceramic.

DO NOT USE GLASS TYPE FUSES

When changing the control board ensure that the incoming active goes to the relay tab marked COM.

SERVICE MODE 8

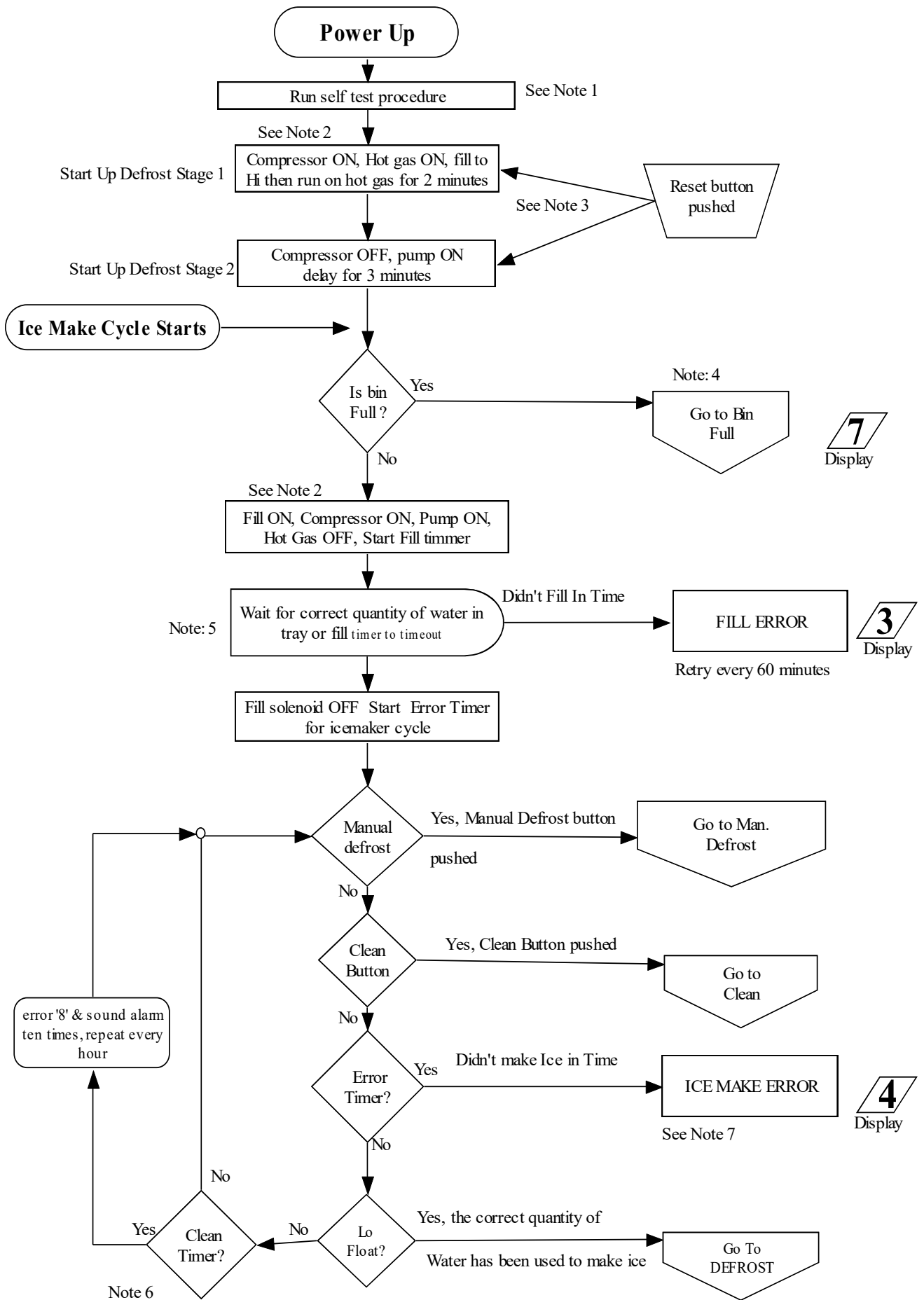
After 3000 hours of ice making time there will be 10 beeps and number **8** will flash 10 times indicating that the machine requires servicing. This will occur every hour until the machine has been put through a clean cycle. Once the clean cycle has been carried out the machine starts counting the hours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

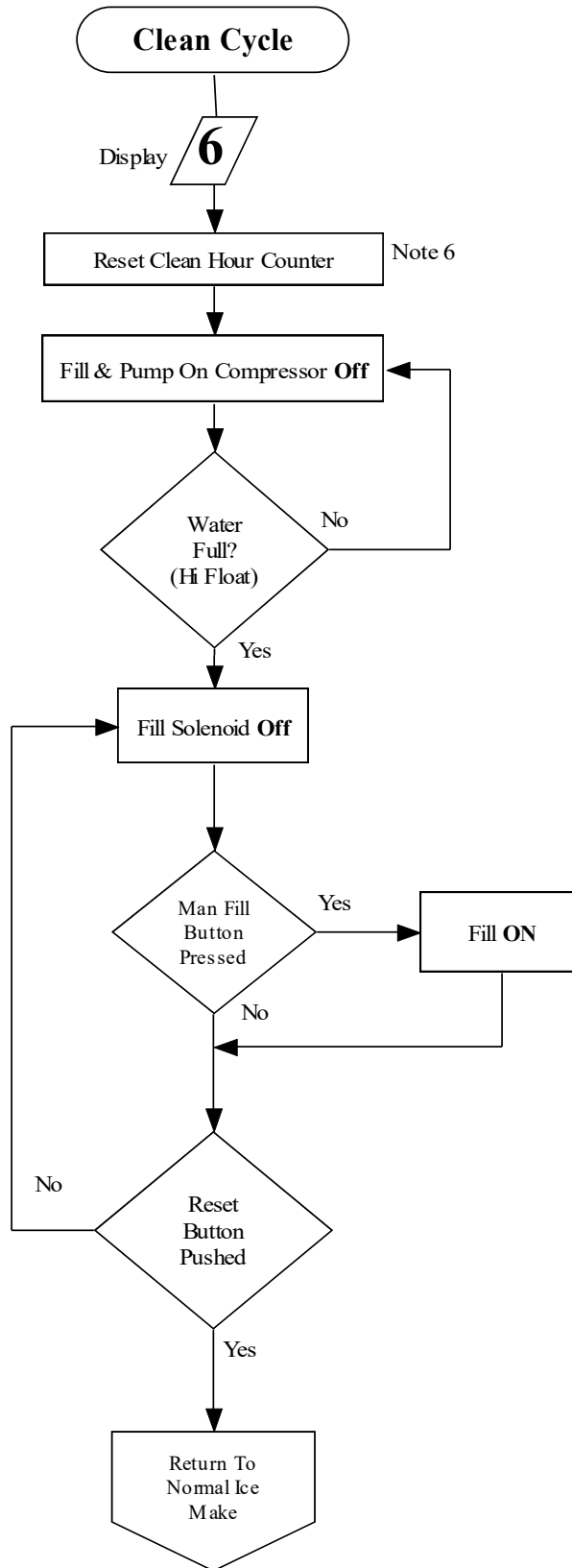
CLEAN CYCLE 6

Cleaning of the icemaker is recommended on a regular basis, at least three times a year.

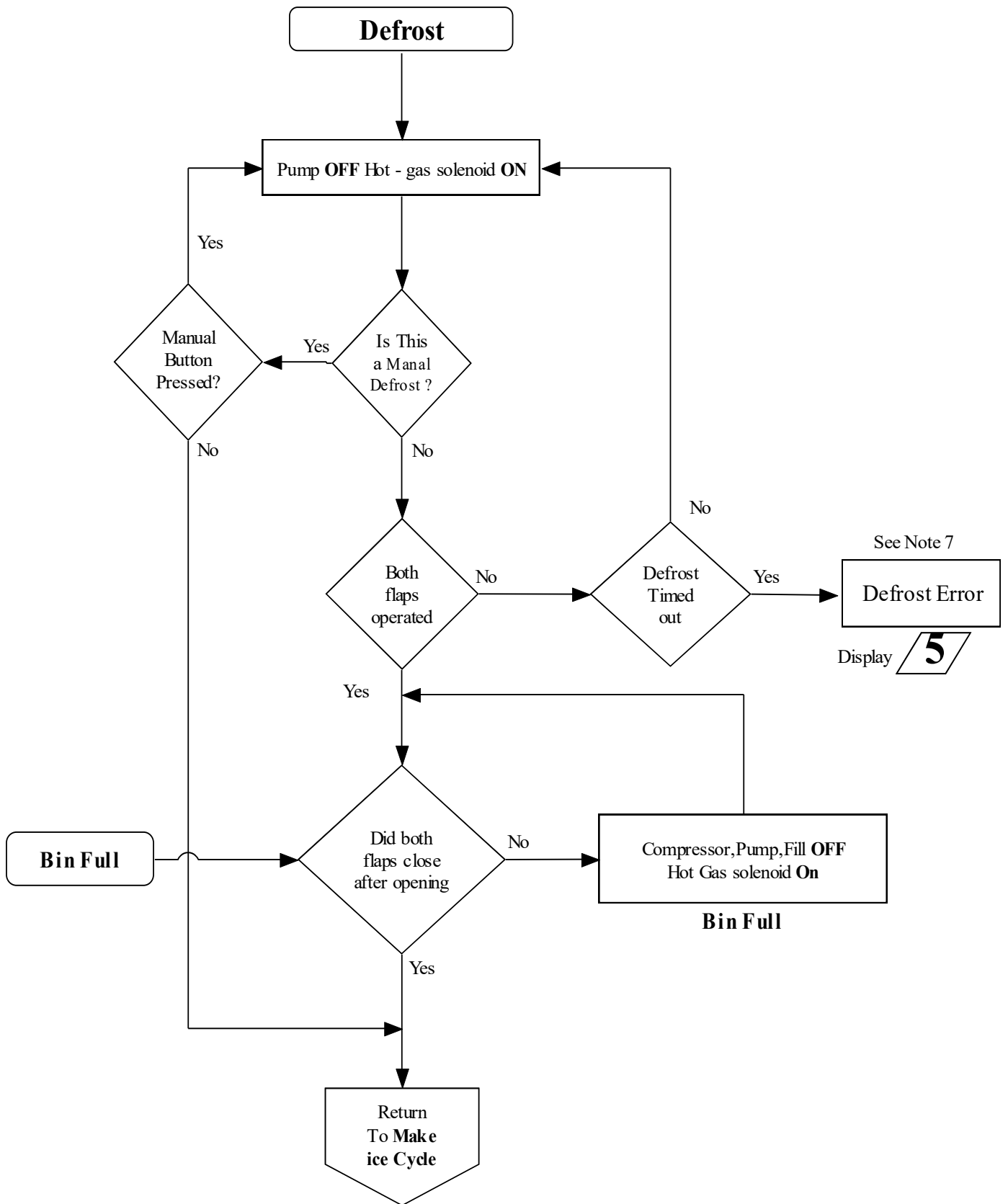
1. Turn off water and fit new water filter and purge water supply line.
2. Empty the remaining ice in storage bin into a clean hygienic sealed receptacle and seal to prevent contamination. (Always dispose the bottom 20% of ice in bin as it will most likely be dust contaminated).
3. Remove front, top and right side panels, visually check all components are in satisfactory condition and do not require replacement due to mechanical or electrical breakdown.
4. With the machine in ICE MAKE CYCLE press & hold the clean button until the machine goes into clean mode **6**, wait for the water trough to fill and the fill light goes off then remove the drain cap from the trough and allow all the water to drain away and replace the drain cap.
5. Mix the specified quantity of cleaning medium as per manufacturers specifications in a separate container and pour into water trough and allow to circulate for 25 minutes maximum or until plate is clean. Then drain the water trough and replace drain cap.
6. Mix up sanitizer in a container as per manufacturers specification and pour into water trough and allow to circulate for 5 minutes. Remove drain cap and drain water trough then replace drain cap.
7. Press the fill button until the water overflows the trough, remove the drain cap and allow all the water to drain away, replace cap, press fill button again, when full let circulate for 5 minutes before draining trough.
8. Replace drain cap and **PRESS RESET**. When display returns to NORMAL ICE MAKER CYCLE switch off power.
9. Vacuum or blow out condenser ensuring dust does not contaminate the surrounding area.
10. Wipe out Compressor section removing dust and grime around fan motor. Spin fan and check for noisy bearings.
11. Remove pump from trough and drain out and clean out any sludge remaining in trough. Dismantle water distributor and clean with bottle brush taking note that all water holes are clean and unobstructed. Reassemble and refit distributor and water pump.
12. Sanitize storage bin as per manufacturers specifications.
13. Start machine & check all machine signal functions, ensuring board lights operate when curtains, high / low switches are activated.
14. Check purge on fill cycle and adjust if required. (See Page 3)
15. After second ice drop check thickness and adjust if required. (See Page 3)
16. Replace machine panels.
17. Clean down all external surfaces.
18. Replace ice into storage bin.

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





Clean Cycle Processing



BIN FULL and DEFROST Processing

Note 1.

Self Test Procedure.

Fail = Buzzer sounds continuously.

Pass = Buzzer beeps several times, the number of beeps indicates the control board version number, e.g. 1 beep for version 1 etc.

Note 2.

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 defrost will cancel the defrost and place the machine in normal ice making mode.

Note 4.

Bin Full is indicated by one or more of the ice curtains remaining open after an ice drop.

Note 5.

The correct quantity of water during fill is signalled by the high float switch, the water fills until the top float switch operates. The water will continue to fill for a period of time after reaching the high float. This is the purge time.

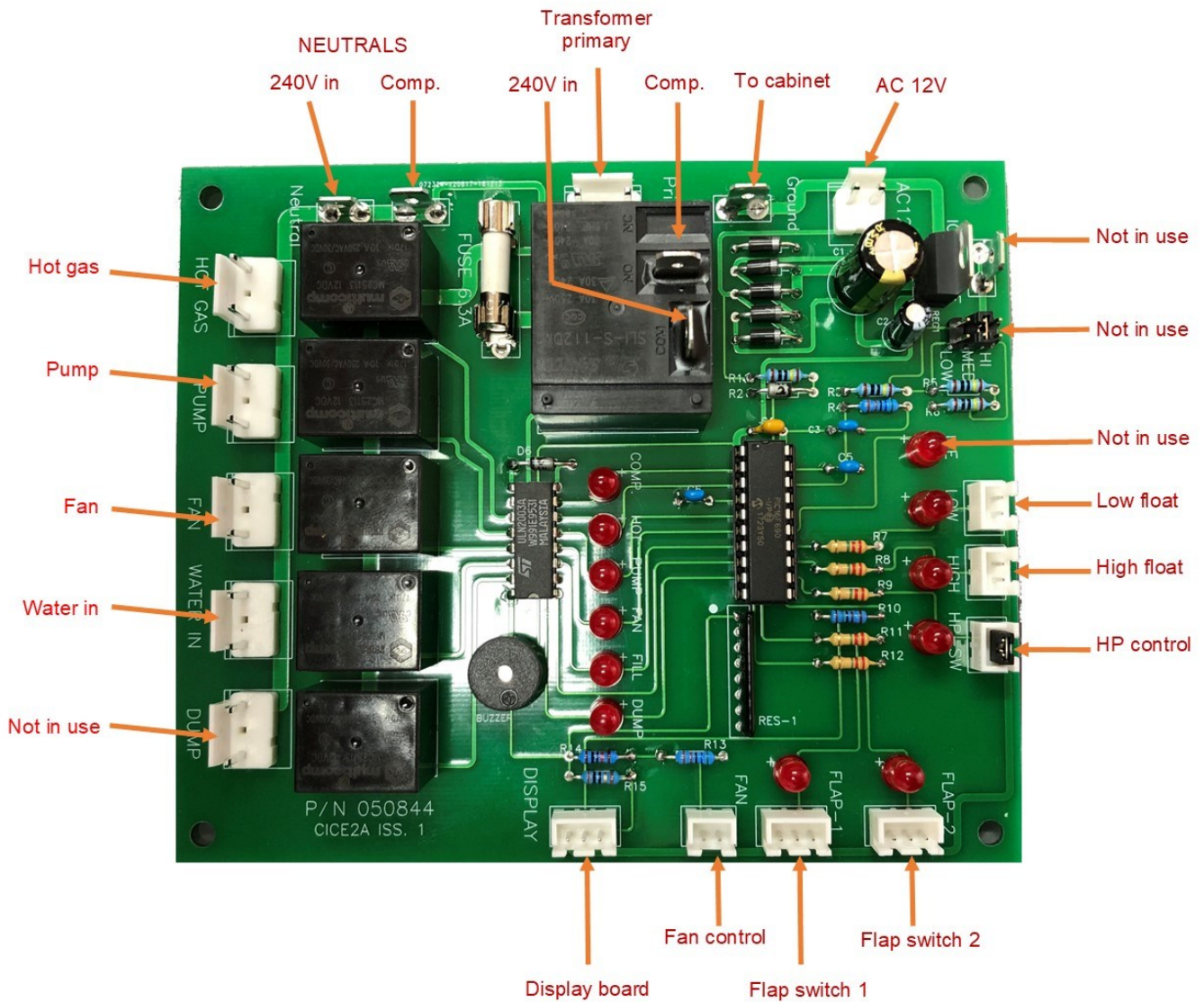
Note 6.

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

Note 7.

The first time this error occurs the machine will restart at **"Power Up"** if the same error is detected after Power Up the machine will shut down and the appropriate error number will flash on the display.

FLOAT CONTROL BOARD COMPONENT CONNECTIONS



Wiring harness identification numbers and colours

- | | |
|-----------|-------------|
| 1. Brown | HOT GAS |
| 2. Red | PUMP |
| 3. Orange | FAN |
| 4. Yellow | WATER INLET |
| 5. Green | FLAP 2 |
| 6. Blue | FAN CONTROL |
| 7. Purple | FLAP 1 |
| 8. Grey | HP CONTROL |
| 9. White | HIGH FLOAT |
| 0. Black | LOW FLOAT |

PARTS LIST

DESCRIPTION	SC130	SC220	SC270	SC500
Compressor	050654	050766	050766	050841
Fan/motor assy.	050348	050348	050348	050620
Fan control	050622	050622	050622	050622
Curtain Assembly—Front	050774	050757	050776	050778
Curtain Assembly—Rear	050773	050756	050775	050777
Evaporator Assembly	050478SP	050751	050523SP	050524SP
Solenoid valve - water	050023	050023	050023	050023
Solenoid valve - hot gas	050704	050704	050704	050705
Capillary tube	1.62mm	1.78mm	1.78mm	----
	2500mm	2600mm	2250mm	----
Expansion valve body	----	----	----	050850
Expansion valve orifice	----	----	----	050851
Control board	050844F	050844F	050844F	050844F
Display board	050877	050877	050877	050877
Fuse - 3.15 amp	050011	050011	050011	050011

MANUFACTURER'S LIMITED LABOUR AND PARTS WARRANTY

STUART COMMERCIAL ICEMAKERS

Model SC130, SC220, SC270, SC500

CERISUN PTY. LTD. trading as STUART MANUFACTURING at 1 JAYELEM CRESCENT PADSTOW warrants to the original owner/user that any STUART commercial icemaker manufactured on or after January 1st 1997 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.

Any 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 or purge levels 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 manufactured 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.

WARRANTY CLAIM GUIDELINES

Model SC130, SC220, SC270, SC500, SC1000, SC2000

As from January 1st 1993 all STUART 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, 1993 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.