



ELECTRONIC MODULAR FLAKERS

104409 **F80**

104436 **F125**

SERVICE MANUAL

TABLE OF CONTENTS

Specification F 80C	pagina	4
Specification F 125C		5
Specification F 120		6
Specification F 200		7
Specification SF 300		8
Specification SF 500		9
Specification SFN 1000		10

GENERAL INFORMATION AND INSTALLATION

Introduction		11
Unpacking and Inspection - Ice maker		11
Unpacking and Inspection - Storage bin		11
Location and levelling		12
Electrical connections		13
Water supply and drain connection		13
Final ceck list		13
Installation pratice		14

OPERATING INSTRUCTIONS

Start up		15
Operations checks		17

PRINCIPLE OF OPERATION (how it works)

Water circuit		20
Refrigerant circuit		21
Mechanical system		23
Operating pressures		24
Components description		25

ADJUSTMENT, REMOVAL AND REPLACEMENT PROCEDURES

Adjustment of the evaporator water level		29
Replace of the gear motor magnetic sensor		29
Replace of auger, water seal, bearing and coupling		29
Replacement of the gear motor assy		30
Replacement of freezing cylinder		31
Wiring diagram		32
Service diagnosis		36

MAINTENANCE AND CLEANING INSTRUCTIONS

General		38
Icemakers		38
Cleaning instructions of water system		38

TECHNICAL SPECIFICATION**ELECTRONIC MODULAR
FLAKERS mod. F80 (R 134a)**

Produzione di ghiaccio in 24 ore fino a
Ice produced for 24 hours up to
Eisproduktion in 24 Stunden bis zu
Production de glace en 24 h jusqu'à
Produccion de hielo en las 24 horas hasta

kg. 90

Raffreddamento unità condensatrice aria o acqua: consumo n. 20 litri per ora*
Condensing unit cooling air or water: consumption n. 20 litres per hour*
Kondensatoreinheit Luft oder Wasser: Verbrauch n. 20 liter pro Stunde*
Refroidissement de l'unité de condensation air ou eau: consommation n. 20 litres par heure*
Refrigeración de la unidad condensadora aire o agua: consumo n. 20 litros para hora*

Potenza assorbita/Absorbed power/Leistungsaufnahme **W 400**
Puissance absorbée/Potencia Absorbida

Refrigerante/Refrigerant/Kältemittel **R 134a**
Réfrigérant/Refrigerant

Attacco entrata acqua/Water inlet connection **3/4" Gas**
Anschluss für Wasserzufluss/Prise entrée d'eau/conexión entrada agua

Attacco scarico acqua/Water output connection **mm. Ø 20**
Anschluss für Wasserabfluss/Prise écoulement d'eau
Conexión desague

Alimentazione monofase/Single phase input/
Einphasige Spannung/Alimentation monophasé
Alimentación monofásica **220V-240V - 50 Hz**

Alimentazione voltaggi speciali: a richiesta
Extra voltages: on request
Andere Spannungen: Lieferbar auf Wunsch
Alimentation voltages spéciaux: sur demande
Otros voltajes especiales: según pedido

Capacità deposito - Storage bin capacity **kg. 20**
Inhalt des Vorrats-Eisbehänders
Capacité de la réserve - Capacidad del deposito

Carrozzeria **inox**
External structure
Ausführung
Carrosserie
Carroceria

Peso netto/Net weight/Netto Gewicht **kg. 53**
Poids net/Peso neto

(*) con temperatura acqua 15 °C
with water temperature 15 °C
mit Wassertemperatur 15 °C
avec température eau 15 °C
con temperatura agua 15 °C

PRODUZIONE DI GHIACCIO
ICE PRODUCTION
EIS PRODUKTION
PRODUCTION DE GLACE
PRODUCION DE HIELO

**RAFFR. AD ACQUA/WATER COOLED
WASSERGEKÜHLT/REFR. A EAU
REFR. A AGUA**

Temperatura acqua/Water temperature
Wassertemperatur/Température eau
Temperatura agua

°C	32°	21°	15°	10°	
10°	76	81	84	86	kg
21°	72	77	80	82	kg
32°	68	74	76	78	kg
38°	64	70	71	72	kg

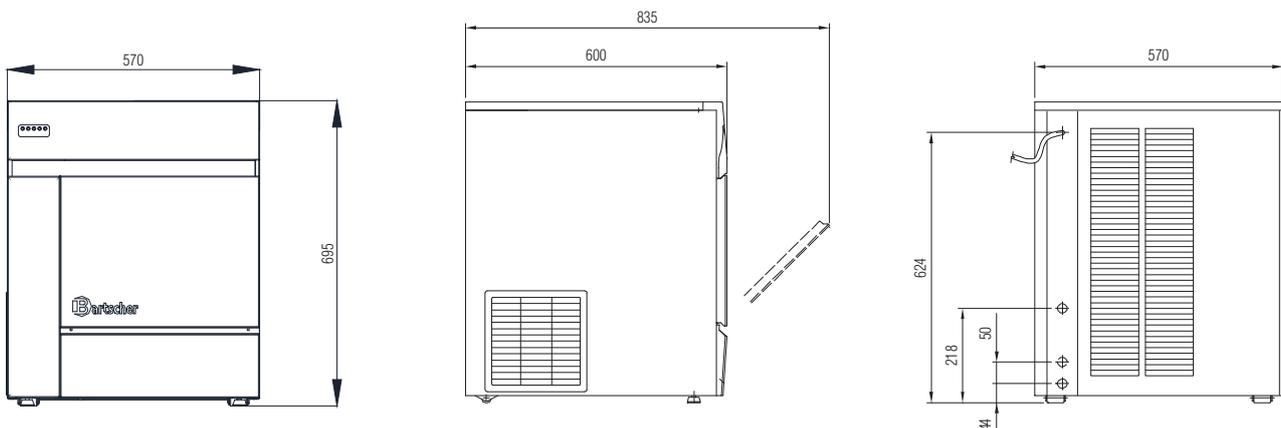
Prod. ghiaccio in 24 h/Ice prod. per 24 h
Eisprod. in 24 h/Prod. de glace en 24 h
Prod. de hielo en 24 h

**RAFFR. AD ARIA/AIR COOLED
LUFTGEKÜHLT/REFR. A AIR
REFR. A AIRE**

Temperatura acqua/Water temperature
Wassertemperatur/Température eau
Temperatura agua

°C	32°	21°	15°	10°	
10°	78	84	87	90	kg
21°	72	78	81	84	kg
32°	58	63	66	68	kg
38°	48	52	54	56	kg

Prod. ghiaccio in 24 h/Ice prod. per 24 h
Eisprod. in 24 h/Prod. de glace en 24 h
Prod. de hielo en 24 h

Dimensioni / Dimensions / Masse / Dimensions / Dimensiones

TECHNICAL SPECIFICATION

ELECTRONIC MODULAR FLAKERS mod. F125 (R 134a)

Produzione di ghiaccio in 24 ore fino a
Ice produced for 24 hours up to
Eisproduktion in 24 Stunden bis zu
Production de glace en 24 h jusqu'à
Produccion de hielo en las 24 horas hasta

kg. 120

Raffreddamento unità condensatrice
Condensing unit cooling
Kondensatoreinheit
Refrondissement de l'unité de condensation
Refrigeración de la unidad condensadora

aria
air
Luft
air
aire

o acqua: consumo n. 24 litri per ora*
or water: consumption n. 24 litres per hour*
oder Wasser: Verbrauch n. 24 liter pro Stunde*
ou eau: consommation n. 24 litres par heure*
o agua: consumo n. 24 litros para hora*

Potenza assorbita/Absorbed power/Leistungsaufnahme
Puissance absorbée/Potencia Absorbida

W 480

Refrigerante/Refrigerant/Kältemittel
Réfrigérant/Refrigerant

R 134a

Attacco entrata acqua/Water inlet connection
Anschluss für Wasserzufluss/Prise entrée d'eau/conexión entrada agua

3/4" Gas

Attacco scarico acqua/Water output connection
Anschluss für Wasserabfluss/Prise écoulement d'eau
Conexión desague

mm. Ø 20

Alimentazione monofase/Single phase input/
Einphasige Spannung/Alimentation monophasé
Alimentación monofásica

220V-240V - 50 Hz

Alimentazione voltaggi speciali:
Extra voltages:
Andere Spannungen:
Alimentation voltages spéciaux:
Otros voltajes especiales:

a richiesta
on request
Lieferbar auf Wunsch
sur demande
según pedido

Capacità deposito - Storage bin capacity
Inhalt des Vorrats-Eisbehänders
Capacité de la réserve - Capacidad del deposito

kg. 27

Carrozzeria
External structure
Ausführung
Carrosserie
Carroceria

inox

Peso netto/Net weight/Netto Gewicht
Poids net/Peso neto

kg. 64

(*) con temperatura acqua 15 °C
with water temperature 15 °C
mit Wassertemperatur 15 °C
avec température eau 15 °C
con temperatura agua 15 °C

PRODUZIONE DI GHIACCIO
ICE PRODUCTION
EIS PRODUKTION
PRODUCTION DE GLACE
PRODUCION DE HIELO

**RAFFR. AD ACQUA/WATER COOLED
WASSERGEKÜHLT/REFR. A EAU
REFR. A AGUA**

Temperatura acqua/Water temperature
Wassertemperatur/Température eau
Temperatura agua

°C	32°	21°	15°	10°	
10°	97	108	117	120	kg
21°	95	105	115	117	kg
32°	90	100	107	110	kg
38°	87	97	102	105	kg

Prod. ghiaccio in 24 h/Ice prod. per 24 h
Eisprod. in 24 h/Prod. de glace en 24 h
Prod. de hielo en 24 h

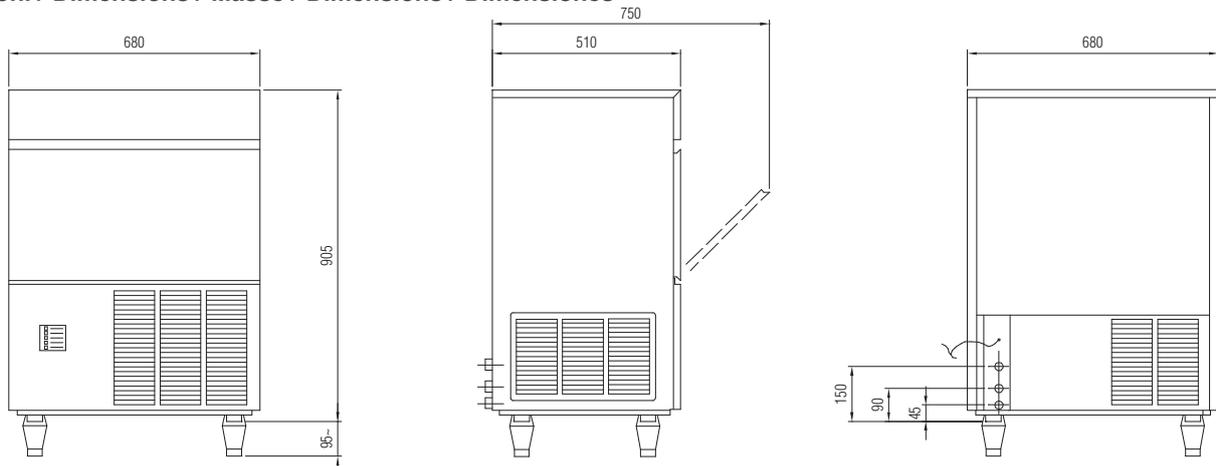
**RAFFR. AD ARIA/AIR COOLED
LUFTGEKÜHLT/REFR. A AIR
REFR. A AIRE**

Temperatura acqua/Water temperature
Wassertemperatur/Température eau
Temperatura agua

°C	32°	21°	15°	10°	
10°	102	111	115	120	kg
21°	95	104	108	110	kg
32°	84	90	94	97	kg
38°	75	81	85	87	kg

Prod. ghiaccio in 24 h/Ice prod. per 24 h
Eisprod. in 24 h/Prod. de glace en 24 h
Prod. de hielo en 24 h

Dimensioni / Dimensions / Masse / Dimensions / Dimensiones



GENERAL INFORMATION AND INSTALLATION

A INTRODUCTION

the step-by-step procedures for the installation, start-up and operation, maintenance and cleaning for the F80 - F125 Modular Ice makers.

The Electronic Flakers and Superflakers are quality designed, engineered and manufactured. Their ice making systems are thoroughly tested providing the utmost in flexibility to fit the needs of a particular user.

B. UNPACKING AND INSPECTION

Ice maker

- 1 Call your authorized Distributor or Dealer for proper installation.
- 2 Visually inspect the exterior of the packing and skid. Any severe damage noted should be reported to the delivering carrier and a concealed damage claim form filled in subject to inspection of the contents with the carrier's representative present.
- 3
 - a) Cut and remove the plastic strip securing the carton box to the skid.
 - b) Cut open the top of the carton and remove the polystyrene protection sheet.

NOTE. To retain the safety and performance built into this ice maker, it is important that installation and maintenance be conducted in the manner outlined in this manual.

- c) Pull out the polystyrene posts from the corners and then remove the carton.
 - d) Lift the whole carton and pull it out from the device.
- 4 Remove top and sides panels of the unit and inspect for any concealed damage. Notify carrier of your claim for the concealed damage as stated in step 2 above.
- 5 Remove all internal support packing and masking tape.
- 6 Check that refrigerant lines do not rub against or touch other lines or surfaces, and that the fan blades move freely.
- 7 Check that the compressor fits snugly onto all its mounting pads.
- 8 See data plate on the rear side of the unit and check that local main voltage corresponds with the voltage specified on it.

C. LOCATION AND LEVELLING

WARNING. *This Modular Flaker and Superflaker is designed for indoor installation only. Extended periods of operation at temperature exceeding the following limitations will constitute misuse under the terms of the Manufacturer's Limited Warranty resulting in LOSS of warranty coverage.*

- 1 Position the storage bin in the selected permanent location. Criteria for selection of location include:
 - a) Minimum room temperature 10°C (50°F) and maximum room temperature 40°C (100°F).
 - b) Water inlet temperatures: minimum 5°C (40°F) and maximum 35°C (90°F).
 - c) Well ventilated location for air cooled models (clean the air cooled condenser at frequent intervals).
 - d) Service access: adequate space must be left for all service connections through the rear of the ice maker.

A minimum clearance of 15 cm (6") must be left at the sides of the unit for routing cooling air drawn into and exhausted out of the compartment to maintain proper condensing operation of air cooled models.
- 2 Level the Storage Bin Assy in both the left to right and front to rear directions by means of the adjustable legs.

NOTE: *This ice flake maker contains sensitive and highly precise parts. Knocks and heavy blows must therefore be avoided.*

D. ELECTRICAL CONNECTIONS

See data plate for current requirements to determine wire size to be used for electrical connections. All icemakers require a solid earth wire.

All ice machines are supplied from the factory completely pre-wired and require only electrical power connections to the wire cord provided at the rear of the unit.

Make sure that the ice machine is connected to its own circuit and individually fused (see data plate for fuse size).

The maximum allowable voltage variation should not exceed -10% and +10% of the data plate rating. Low voltage can cause faulty functioning and may be responsible for serious damage to the overload switch and motor windings.

NOTE. *All external wiring should conform to national, state and local standards and regulations.*

Check voltage on the line and the ice maker's data plate before connecting the unit.

E. WATER SUPPLY AND DRAIN CONNECTIONS

When choosing the water supply for the ice flaker consideration should be given to:

- a) Length of run
- b) Water clarity and purity
- c) Adequate water supply pressure

Since water is the most important single ingredient in producing ice you cannot emphasize too much the three items listed above.

Low water pressure, below 1 bar may cause malfunction of the ice maker unit.

Water containing excessive minerals will tend to produce scale build-up on the interior parts of the water system while too soft water (with too low contents of mineral salts), will produce a very hard flaker ice.

ATTENTION. *The use of fully hardened water (without or nearly without mineral salts) with electric cable capability of under 30 μ S blocks the flow of low voltage electricity between the lowest sensors in the swimming pool and therefore causes the device to be switched off or to stop working*

Dark chlorinated or iron-containing water can be improved through the active carbon filter

If water contains a high level of impurities, it is advisable to consider the installation of an appropriate water filter or conditioner.

WATER SUPPLY

Connect the 3/4" GAS male of the water inlet fitting, using the food grade flexible hoses supplied to the cold water supply line with regular plumbing fitting and a shut-off valve installed in an accessible position between the water supply line and the unit.

If water contains a high level of impurities, it is advisable to consider the installation of an appropriate water filter or conditioner.

WATER SUPPLY - WATER COOLED MODELS

The water cooled versions of Ice Makers require two separate inlet water supplies, one for the water making the flaker ice and the other for the water cooled condenser.

Connect the 3/4" GAS male fitting of the water inlet, using the flexible hose supplied to the cold water supply line with regular plumbing fitting and a shut-off valve installed in an accessible position between the water supply line and the unit.

WATER DRAIN

The recommended drain tube is a plastic or flexible hose with 18mm (3/4") I.D. which runs to an open trapped and vented drain. When the drain is a long run, allow 3 cm pitch per meter (1/4" pitch per foot). Install a vertical open vent on drain line high point at the unit drain connection to ensure good draining.

The ideal drain receptacle is a trapped and vented floor drain.

WATER DRAIN - WATER COOLED MODELS

Connect the 3/4" GAS male fitting of the condenser water drain, utilizing a second flexible hose to the open trapped and vented drain.

This additional drain line must not interconnect to any other of the units drains.

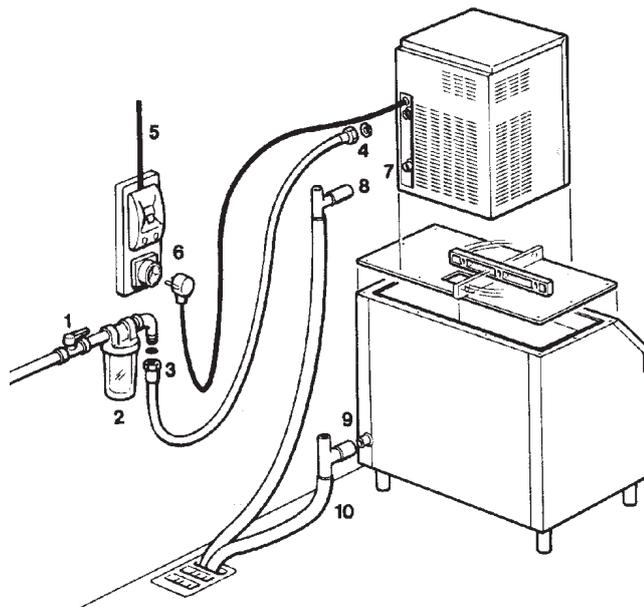
NOTE. *The water supply and the water drain must be installed to conform with the local code. In some case a licensed plumber and/or a plumbing permit is required.*

F. FINAL CHECK LIST

- 1 Is the unit in a room where ambient temperatures are within a minimum of 10°C (50°F) even in winter months?
- 2 Is there at least a 15 cm (6") clearance around the unit for proper air circulation?
- 3 Is the unit level? (IMPORTANT)

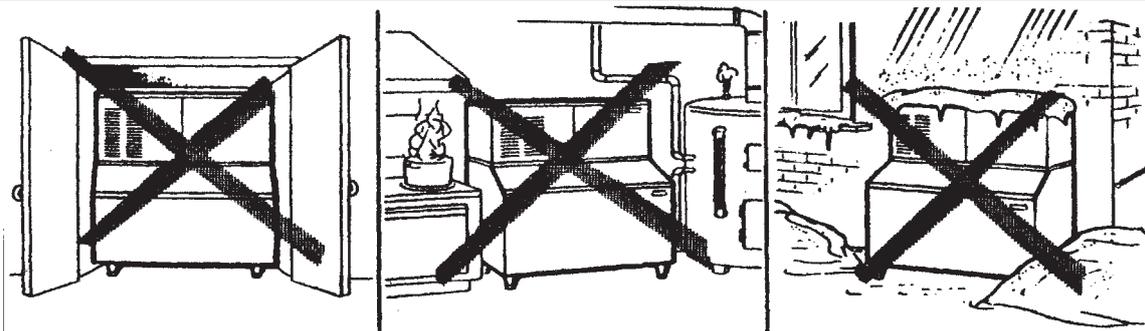
- 4 Have all the electrical and plumbing connections been made, and is the water supply shut-off valve open?
- 5 Has the voltage been tested and checked against the data plate rating?
- 6 Has the water supply pressure been checked to ensure a water pressure of at least 1 bar (14 psi). been checked to ensure that the compressor is snugly fitted onto the mounting pads?
- 8 Check all refrigerant lines and conduit lines to guard against vibrations and possible failure.
- 9 Have the bin liner and cabinet been wiped clean?
- 10 Has the owner/user been given the User Manual and been instructed on the importance of periodic maintenance checks?
- 11 Has the Manufacturer's registration card been filled in properly?
Check for correct model and serial number against the serial plate and mail the registration card to the factory.
- 12 Has the owner been given the name and telephone number of the authorized Service Agency serving him?

G. INSTALLATION PRACTICE



- 1 Hand shut-off valve
- 2 Water filter
- 3 Water supply line
- 4 3/4" GAS male fitting
- 5 Power line
- 6 Main switch
- 7 Drain fitting
- 8 Vented drain
- 9 Vented drain
- 10 Open trapped vented drain

WARNING. This icemaker is not designed for outdoor installation and will not function in ambient temperatures below 10°C (50°F) or above 40°C (100°F). This icemaker will malfunction with water temperatures below 5°C (40°F) or above 35°C (90°F).



OPERATING INSTRUCTIONS

START UP

After having correctly installed the ice maker and completed the plumbing and electrical connections, perform the following "Start-up" procedure.

- A.** Open the water supply line shutoff valve and put the unit under electrical power by moving the main switch, on the power supply line, to the ON position.
The **first LED - GREEN** - will glow to signal that unit is under power.

NOTE. Every time the unit is put under power, after being kept for sometime in shut-off conditions (electrically disconnected) the **RED LED** will blink for 3 minutes (60' on MF 66 only) after which the unit will start up with the immediate operation of the gear motor assembly and, after few seconds, of the compressor (Fig. 1).

- B.** Elapsed the stand by period the unit starts operating with the activation in sequence of the following assemblies:

GEAR MOTOR/S COMPRESSOR

FAN MOTOR/S (if unit is an air cooled version) kept under control by the condenser temperature sensor which has its probe within the condenser fins (Fig.2).

- C.** After 2 or 3 minutes from the compressor start up, observe that flaker ice begins dropping off the ice spout to fall through the ice chute into the storage bin.

NOTE. The first ice bits that drop into the ice storage bin are not so hard as the evaporating temperature has not yet reached the correct operating value. It is necessary to allow the ice - just made - to cure itself and wait for about ten minutes for the evaporating temperature to reach the correct value so to make more hard bits of ice.

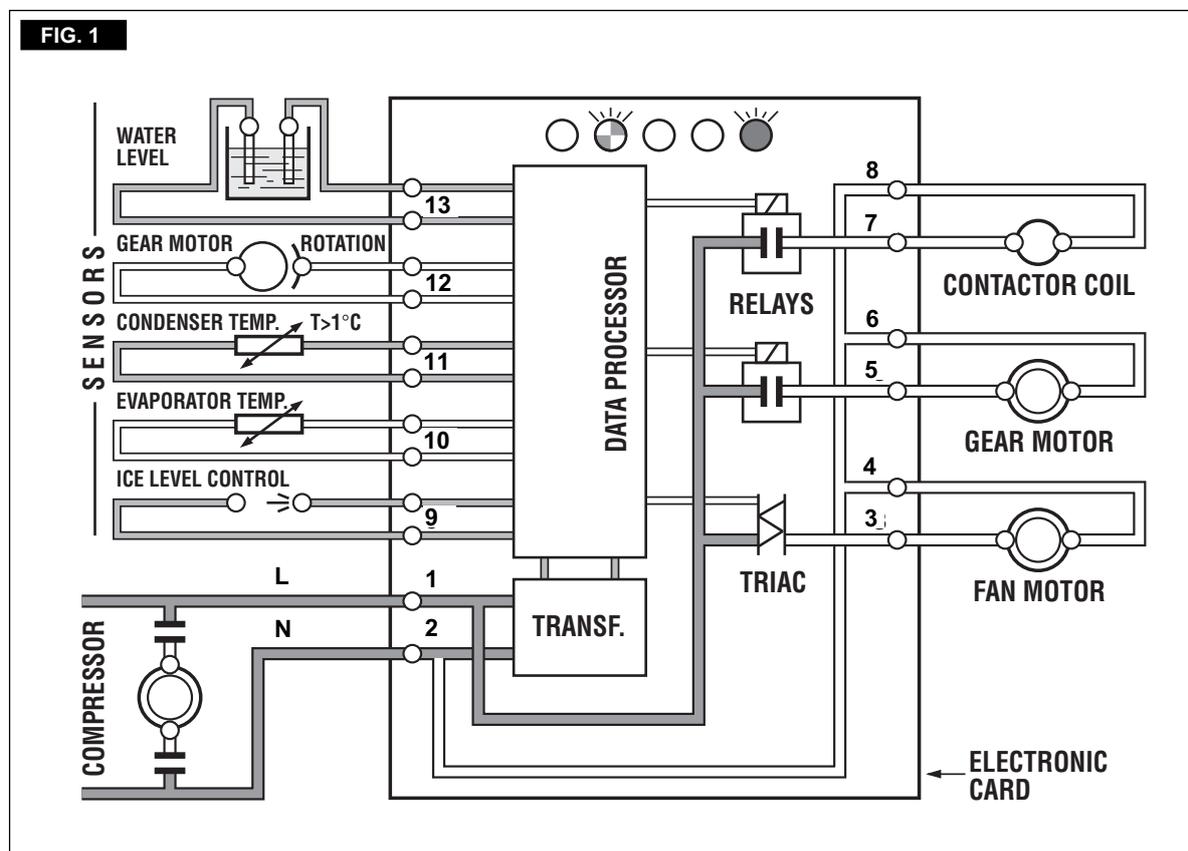


FIG. 2

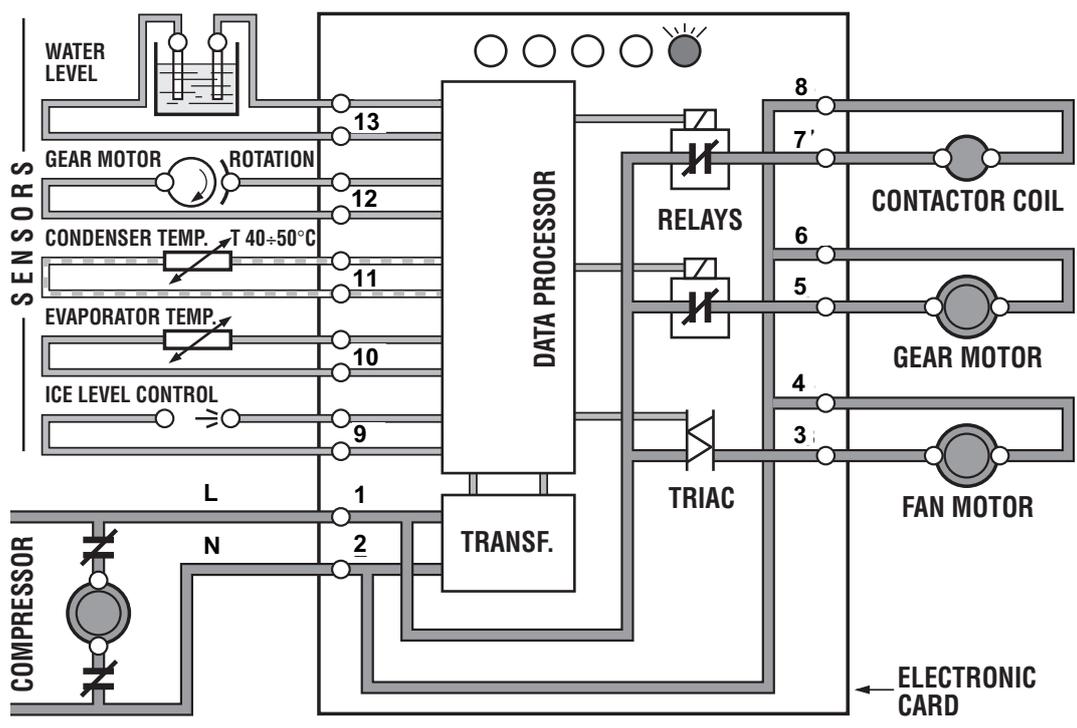
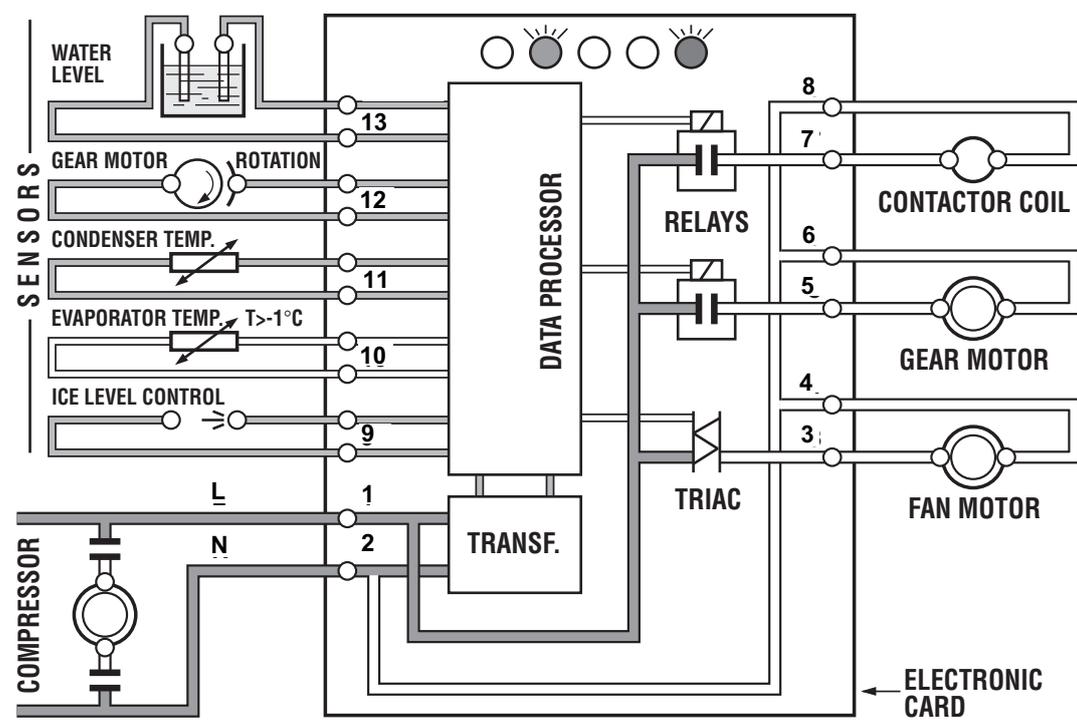


FIG. 3



NOTE. If, after ten minutes from the compressor start-up, the evaporating temperature has not dropped down to a value lower than -1°C (30°F) the evaporating temperature sensor detects such an abnormal situation and stops consequently the unit operation (first the compressor and 3' later the gear reducer).
In this circumstance, the **5th warning YELLOW LED** will blink.



The machine will remain in OFF mode for one hour then it will restart automatically.
In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTS OFF DEFINITELY.
After having diagnosed and eliminated the cause of the too hi evaporating temperature (insufficient refrigerant in the system or compressor not running) it is necessary to unplug and plug in again to restart the machine. The unit, before resuming the normal operation, will go through the **usual 3 minutes STAND-BY period.**

NOTE. On air cooled models, the condenser temperature sensor, which is located within the condenser fins, keeps the head (condensing) pressure between preset values.
In the event of condenser clogged - such to prevent the proper flow of the cooling air - or, in case the fan motor is out of operation, the condenser temperature rises and when it reaches 70°C (160°F) for air cooled version - and 60°C (140°F) - for water cooled version - the condenser temperature sensor shuts-off the ice maker (first the compressor and 3' later the gear reducer) with the consequent light-up of the **RED WARNING LIGHT** (Fig.3).



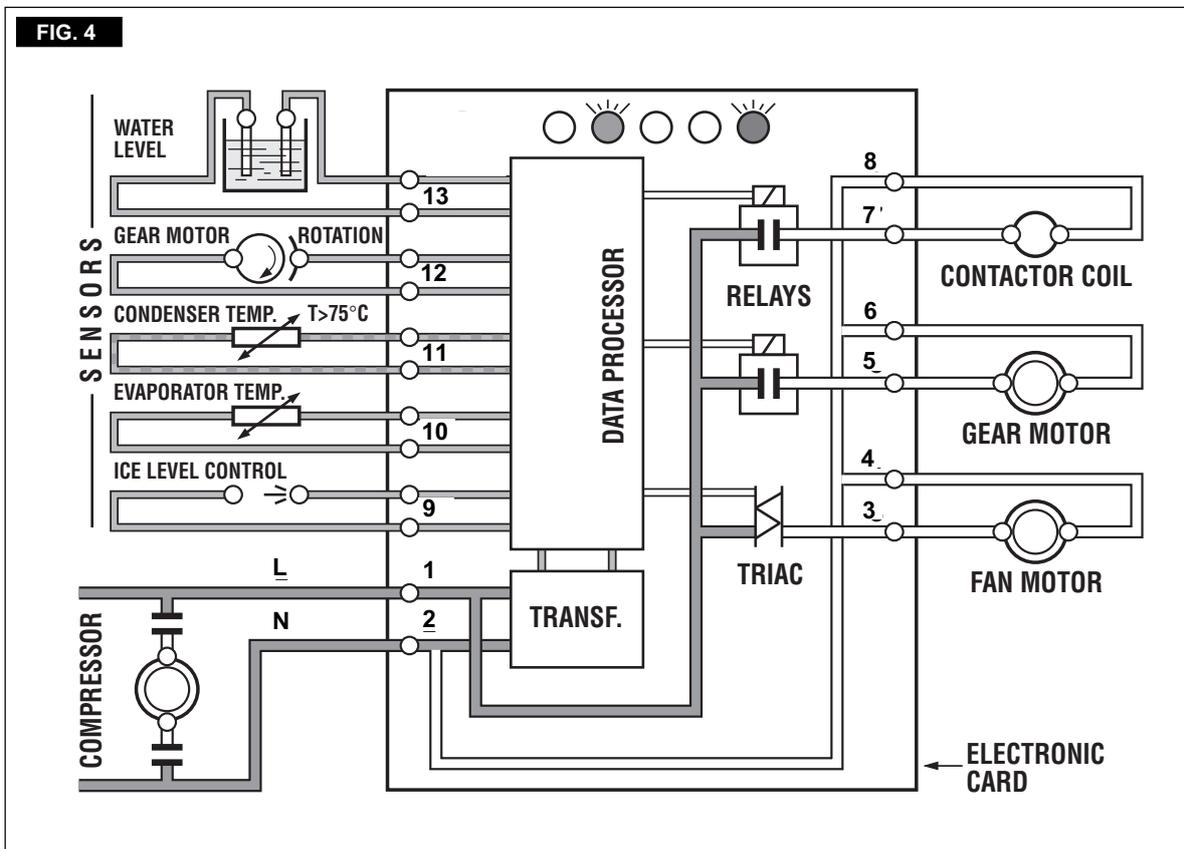
The machine will remain in OFF mode for one hour then it will restart automatically.
In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTS OFF DEFINITELY.
After having diagnosed the reason of the temperature rise and removed its cause, it is necessary to proceed as per the previous "NOTE" to start up again the operation of the ice maker.

OPERATION CHECKS UPON THE UNIT START UP

D. Remove front service panel and, if necessary, install the refrigerant service gauges on the corresponding service valves to check both the HI and LO refrigerant pressures.

E. Check for the correct CUT-OUT and CUT-IN of the **water level sensor** by first shutting closed the water shutoff valve on the water supply line.

FIG. 4



This will cause a gradual decrease of the water level in the float reservoir and as soon as the level gets below the two vertical metal pins, the flaker stops to operate (compressor first and 3' later the gear reducer) and the **YELLOW warning LED** will glow to signal the shortage of water (Fig. 4)



NOTE. The water level sensor detects the presence of water in the float reservoir and confirms it to the micro processor by maintaining a low voltage current flow between the two metal pins using the water as conductor.

WARNING. The use of de-mineralized water (water with no salt content) having an electrical conductivity lower than 30 μ S, will cause break with the consequent **CUT-OUT** of the flaker and the glowing of the **YELLOW LED** of water shortage, even with water in the reservoir.

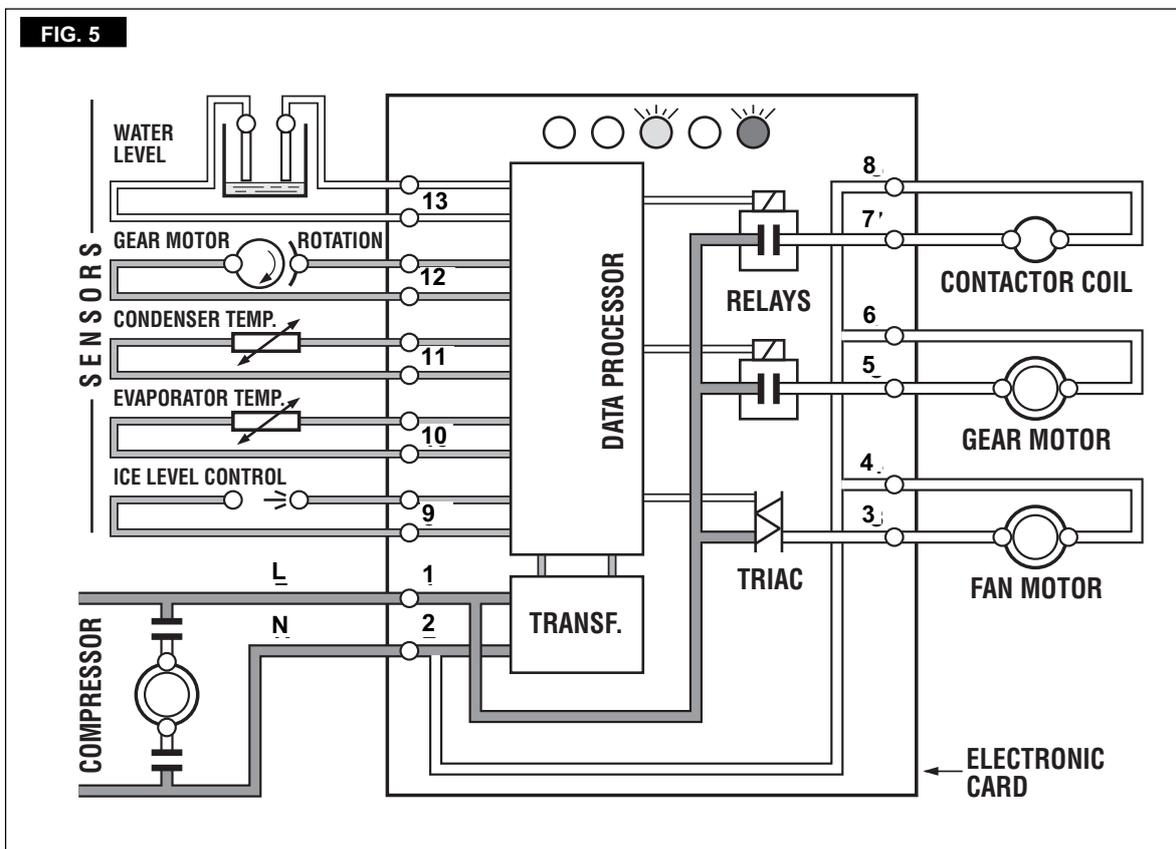
Opening the water supply line shutoff valve to fill up again the float reservoir, the **YELLOW LED** goes off while the **RED LED** starts blinking.

After 3 minutes the unit resumes its total operation with the immediate start-up of the gear motor and, few seconds later, of the compressor.

F. Check for the correct operation of the electronic eye (one per each ice chute on model MF 66) of the optical ice level control, by closing the bottom opening of the vertical ice chute. Wait the built up of the ice into the ice chute till it cuts the light beam of the sensing "eyes". This interruption will cause an immediate blinking of the Bin Full **YELLOW LED** located on the front of the P.C. Board and after about 6 seconds causes the shutoff of the unit (compressor first and 3' later the gear reducer) with the simultaneous lighting (steady) of the **Same LED** signalling the **full bin situation** (Fig.5).



Discharge the ice from the ice chute so to resume the light beam previously interrupted (YELLOW LED blinking fast) and after about 6 seconds the flaker will re-start - through the 3 minutes **STAND-BY** period - with the extinguishing of the YELLOW LED.

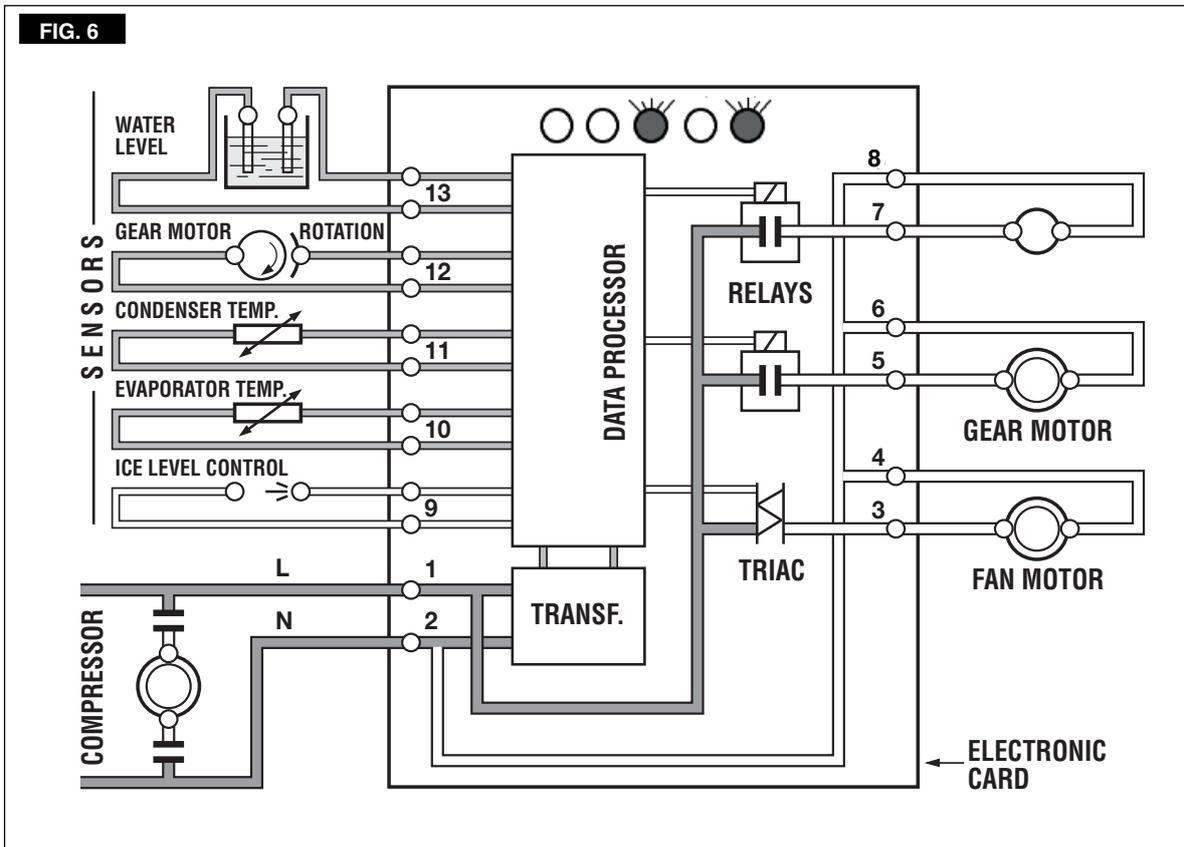


NOTE. The **ICE LEVEL CONTROL (INFRARED SYSTEM)** is independent of the temperature however, the reliability of its detection **can be affected by external light radiations** or by any sort of dirt and scale sediment which may deposit directly on the light source and on the receiver.
 To prevent any possible ice maker malfunction, it is advisable to locate the unit where it can't be reached by any direct light beam or light radiation and to follow the instructions for the periodical cleaning of the light sensor elements as detailed in the **MAINTENANCE AND CLEANING PROCEDURES**.

NOTE. In the front of the PC Board is located a small I/R Trimmer directly connected with the optical Ice level control. By means of its screw it is possible to modify the signal received from the Ice Level control so to overcome some problem caused by dirt and/or low power supply.
 When adjusted it is **very important** to check for its correct operation **using ice (NOT HAND)** to break the Infrared Beam. In case the machine doesn't stop it means that the new setting is too much powerful and need to be reduced always by means of the I/R Trimmer.

M. If previously installed, remove the refrigerant service gauges and re-fit the unit service panels previously removed.

N. Instruct the owner/user on the general operation of the ice machine and about the cleaning and care it requires.



PRINCIPLE OF OPERATION

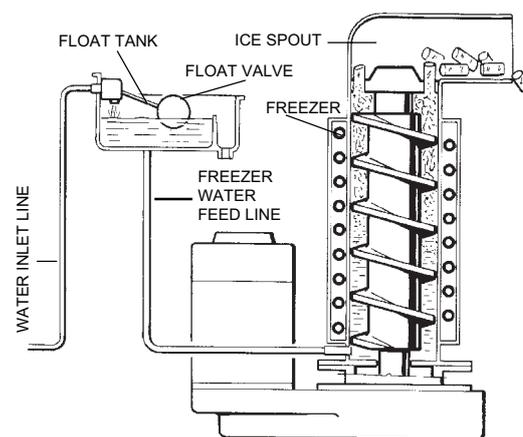
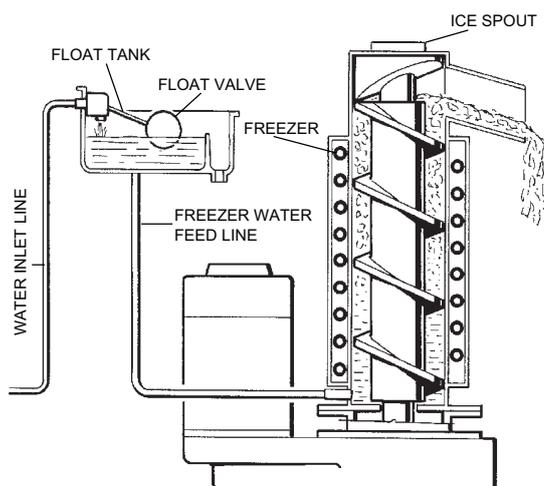
WATER CIRCUIT

The water enters in the machine through the water inlet fitting which incorporates a strainer - located at the rear side of the cabinet - then it goes to the water reservoir flowing through a float valve.

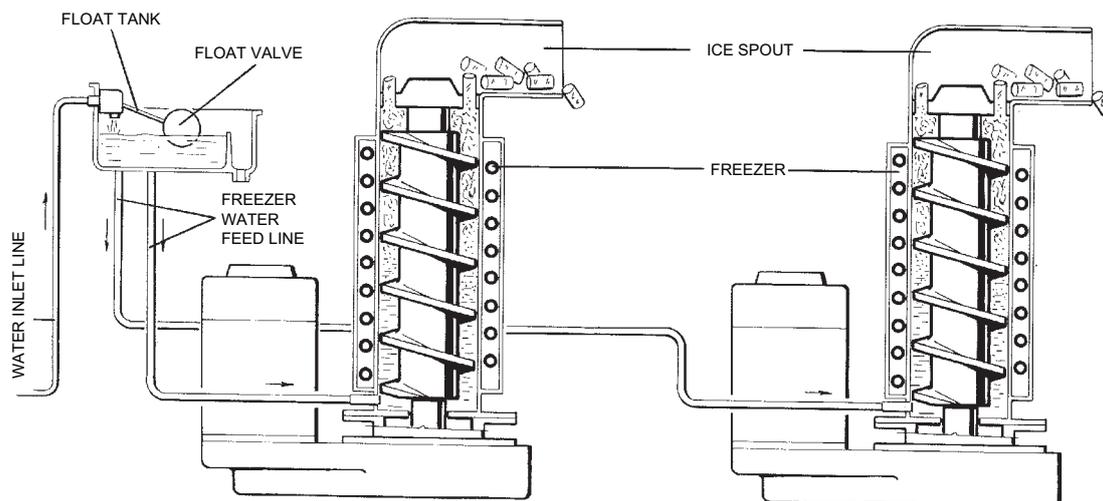
NOTE. The presence of the water in the float reservoir is detected by a system of two sensors which operates in conjunction with the P.C. Board. The two sensors use the water as a conductor to maintain a low voltage current flow between them. In case the water used is very soft (de-mineralized) or the float reservoir gets empty the current flow between the sensors become so weak or is no longer maintained that, as consequence, the P.C. Board shutoff the flaker operation with the simultaneous glowing of the **YELLOW LED** signalling "Shortage of water".

The float reservoir is positioned at the side of the freezing at such an height to be able to maintain a constant water level. The water flows from the reservoir into the bottom inlet of the freezer to surround the stainless steel auger which is vertically fitted in the center of the freezer.

In the freezer the incoming water gets chilled into soft (slush) ice which is moved upward by the rotating action of the auger. The auger rotates counter-clockwise within the freezer powered by a direct drive gear motor and carries the ice upward along the refrigerated freezer inner walls and by doing so the ice gets progressively thicker and harder.



The ice, being constantly lifted up, meets the teeth of the ice breaker which is fitted on the top end of the auger, where it gets compacted, cracked and forced to change from vertical into horizontal motion to be discharged out, through the ice spout and chute, into the storage bin.



By running the ice maker, i.e. by putting the unit under power, starts the automatic and continuous icemaking process which would not stop until the ice storage bin gets filled-up to the level of the control “eyes” located on the ice chute. As the ice level raises to interrupt the light beam running between the two infrared leds, the unit stops after six seconds (compressor first and 3' later the gear reducer), with the simultaneous glowing of the **YELLOW LED** signalling the “**Full Bin**” situation.

NOTE. The interruption of the light beam between the two light sensors is immediately signalled by the blinking of the **BIN FULL YELLOW LED** located on the front of the P.C. Board.

After about **6"** of steady interruption of the light beam the unit stops and the “**Full Bin**” **YELLOW LED** glows steady.

The six seconds of delay prevent the unit from stopping for any undue reason like the momentarily interruption of the light beam caused by the flakes that slides along the ice spout before dropping into the bin.

As some ice gets scooped out from the storage bin, the light beam between the two sensors resumes (fast blinking of YELLOW LED) and six seconds later the ice machine restarts the ice making process - going always through the 3' stand by - and the YELLOW LED goes off.

REFRIGERANT CIRCUIT

The hot gas refrigerant discharged out from the compressor reaches the condenser where, being cooled down, condenses into liquid.

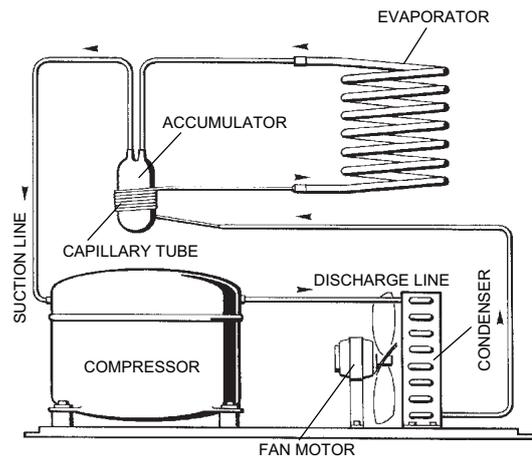
Flowing into the liquid line it passes through the drier filter, then it goes all the way through the capillary tube where it loses some of its pressure so that its pressure and temperature are lowered. Next, the refrigerant enters into the evaporator coil wrapped around the freezer inner tube.

The water being constantly fed at the interior of the freezer inner tube, exchange heat with the refrigerant circulating into the evaporator coil, this cause the refrigerant to boil-off and evaporate, there by it changes from liquid into vapor.

The vapor refrigerant then passes through the

suction accumulator and through the suction line where the refrigerant exchanges heat with the one flowing into the capillary tube (warmer) before being sucked into the compressor to be recirculated.

The refrigerant head pressure is kept between two pre-set values (8÷9 bar - 110÷125 psig on F120) by the condenser temperature sensor which has its probe located within the condenser fins - in air cooled versions.



This condenser temperature sensor, when senses a rising of the condenser temperature beyond the pre-fixed limit, changes its electrical resistance and send a low voltage power flow to the **MICROPROCESSOR** of the P.C. Board which energizes, through a **TRIAC**, the Fan Motor in ON-OFF mode.

On the water cooled versions, the refrigerant head pressure is kept at the constant value of 8.5 bar (120 psig) on F120 by the metered amount of water passing through the condenser which is regulated by the action of the Water Regulating Valve that has its capillary tube connected to the liquid refrigerant line. As pressure increases, the water regulating valve opens to increase the flow of cooling water to the condenser.

NOTE. In case the condenser temperature probe senses that the condenser temperature has risen to 70°C on air cooled version - or 60°C on water cooled version - for one of the following abnormal reasons:

CLOGGED CONDENSER (Air cooled version)

INSUFFICIENT FLOW OF COOLING

WATER (Water cooled version)

FAN MOTOR OUT OF OPERATION (Air cooled version)

AMBIENT TEMPERATURE HIGHER THEN 43°C (110°F)

it causes the total and immediate SHUT-OFF of the machine (compressor first and gear motor 3' later) in order to prevent the unit from operating in abnormal and dangerous conditions.

When the ice maker stops on account of this protective device, there is a simultaneous glowing of the **RED LED**, warning the user of the **Hi Temperature** situation.

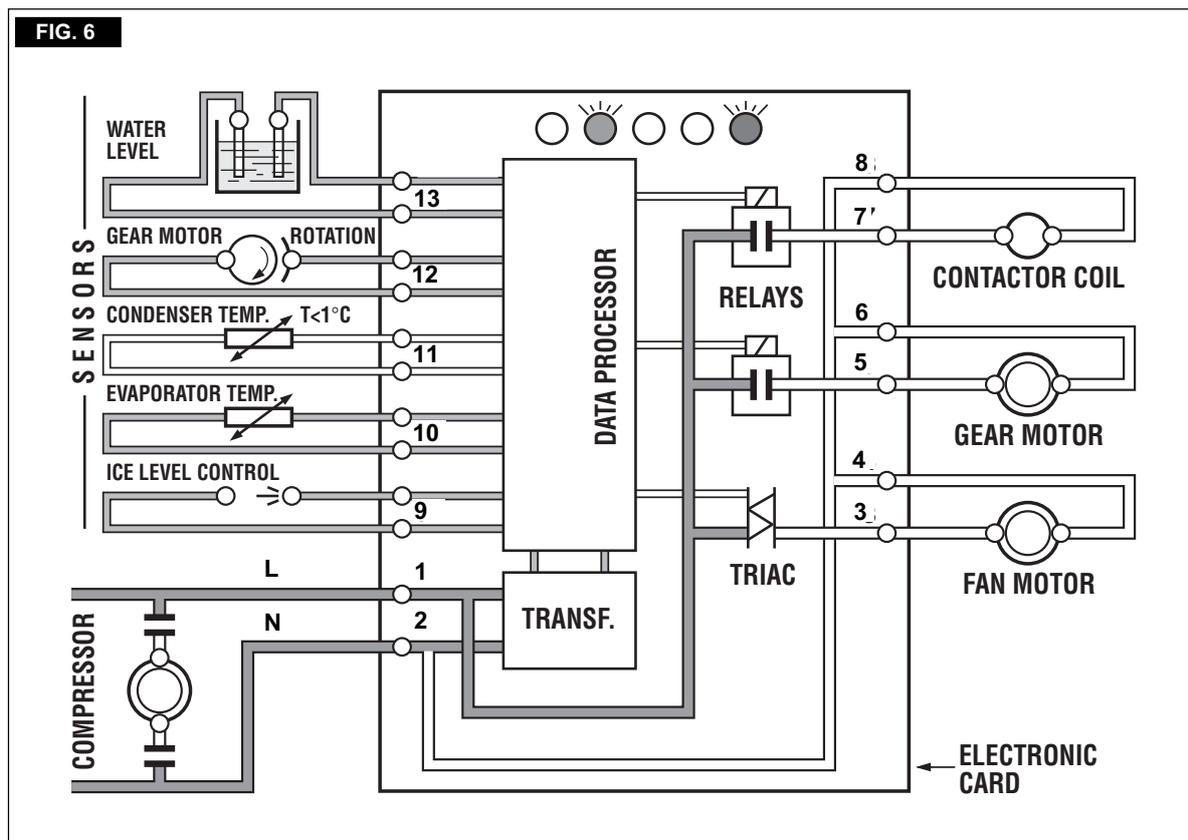
The machine will remain in OFF mode for one hour then it will restart automatically.

In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTS OFF DEFINITELY.

After having eliminated the source of the excessive condenser temperature, to restart the ice-machine it is necessary to unplug and plug in again.

The RED LED starts blinking and three minutes later the flaker unit resume its normal operating mode. The condenser temperature sensor has a further safety function which consist in preventing the unit from operating in Lo-ambient conditions i.e. when the condenser temperature - equivalent to the ambient temperature - is lower then 1°C 34°F (Fig.6).

As soon as the ambient temperature rises up to 5 °C the P.C. Board restarts automatically the machine on the three minutes starting time.



The refrigerant suction or Lo-pressure sets - in normal ambient conditions - on the value of 0.5 bar (7 psig) on F120 after few minutes from the unit start-up.

This value can vary of 0.1 or 0.2 bar (1.5÷3 psig) in relation to the water temperature variations influencing the freezer cylinder.

NOTE. If, after ten minutes from the unit start up, no ice is made and the evaporating temperature detected by the evaporator sensor results to be higher than -1°C (30°F) the ice maker stops (compressor first and gear motor 3' later) and the **5th WARNING YELLOW LED** blinks.

The machine will remain in OFF mode for one hour then it will restart automatically. In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTS OFF DEFINITELY.

MECHANICAL SYSTEM

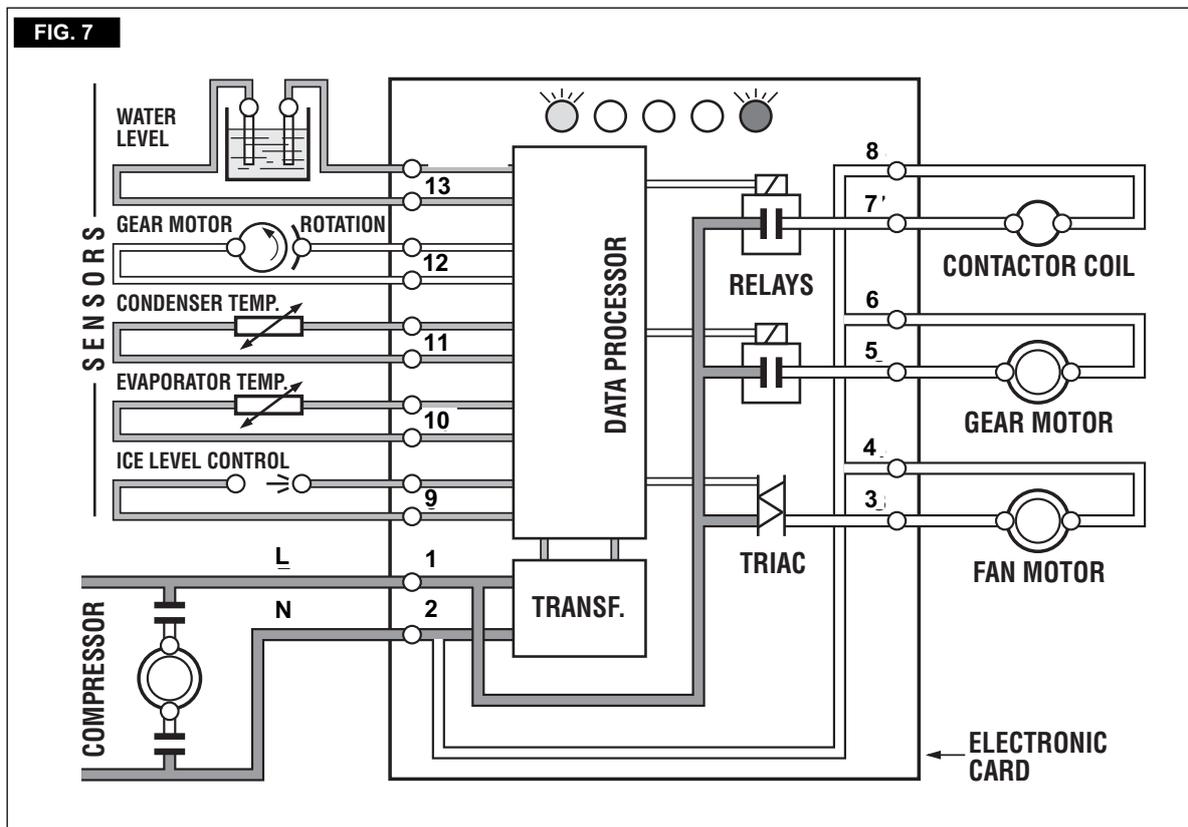
The mechanical system of the Flaker machines consists basically of a gear motor assembly which drives, through a ratched coupling, a worn shaft or auger placed on its vertical axis within the freezing cylinder.

The gear motor is made of a single phase electric motor with a permanent capacitor. This motor is directly fitted in the gear case through which it drives - in counter clockwise rotation at a speed of 9.5 r.p.m. - the freezer auger being linked to it by the ratched coupling.

Too low ambient and water temperature (well below the limitations of respectively 10°C and 5°C - 50°F and 40°F) or frequent interruptions of the water supply to the freezing cylinder (clogging of the water hose connecting the float reservoir to the water inlet at the bottom of the freezer) may cause the ice to get too hard and compact losing fluidity and thereby seizing the auger.

This situation will put under excessive strain and load the entire drive system and freezer bearings.

ANMERKUNG. Zur Wiederherstellung des Betriebs nach Behebung der Ursache für die Abschaltung müssen die oben angegebenen Schritte, wie bei Drehung in die falsche Richtung, durchgeführt werden.



NOTE. Before charging the refrigerant system always check the type of refrigerant and quantity as specified on the individual ice machine data plate. The refrigerant charges indicated are relative to average operating conditions.

Refrigerant metering device:

Capillary tube

Gas charge (R 134a)

	Air cooled	Water cooled
F 80	300 gr	300 gr
F 125	400 gr	300 gr

Working pressure

(with 21°C ambient temperature)

Pressure discharge	8÷9 bar	8÷5 bar
--------------------	---------	---------

Pressure suction	0.5 bar	0.5 bar
------------------	---------	---------

Working pressure

(with 21°C ambient temperature)

Pressure discharge	17÷18 bar	17 bar
--------------------	-----------	--------

Pressure suction	2.5 bar	2.5 bar
------------------	---------	---------

COMPONENTS DESCRIPTION

A Evaporator temperature sensor

The evaporator sensor probe is inserted into its tube well, which is welded on the evaporator outlet line, it detects the temperature of the refrigerant on the way out from the evaporator and signals it by supplying a low voltage current flow to the P.C. Board.

According to the current received, the micro-processor let the ice maker to continue its operations or not. In case the evaporating temperature, after 10 minutes from the unit start-up, does not go below -1°C (30°F) the evaporator sensor signals to stop immediately the unit operation, with the blinking of the **5th Warning YELLOW LED**.

NOTE. *The machine will remain in OFF mode for one hour then it will restart automatically. In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTSOFF DEFINITELY.*

To restart the unit after the shutoff caused by the hi evaporating temperature, it is necessary to switch OFF and ON the power line main disconnect Switch.

B Water level sensor

This sensor consists of two small stainless steel rods vertically fitted on the inner face of the reservoir cover and electrically connected to the low voltage circuit of the P.C. Board.

When the cover of the reservoir is positioned in its place the tips of both the rods dip into the reservoir water transmitting a low power current through the same.

NOTE. *In the event of **shortage of water** in the reservoir or, in case the water used is too soft (de-mineralized) to cause greater resistance to the current flow (electrical conductivity lower than $30\ \mu\text{S}$) this sensor system causes the **shutoff of the machine**, to protect it from running without water or with an inadequate water quality. In this situation the **YELLOW LED** will glow to warn of the machine shutoff and the reason why.*

C Condenser temperature sensor

The condenser temperature sensor probe, located within the condenser fins (air cooled version) or in contact with the tube coil (water cooled version) detects the condenser temperature variations and signals them by supplying current, at low voltage, to the P.C. BOARD.

In case the condenser temperature sensor detects a temperature at the condenser lower than $+3^{\circ}\text{C}$ (37°F) that means ambient temperature too low for the correct unit operation, the sensor signals to the P.C. BOARD to do not start up the unit till the ambient temperature rises to 10°C .

In the air cooled versions, in relation to the different current transmitted, the micro processor of the P.C. BOARD supplies, through a TRIAC, the power at high voltage to the fan motor.

In the event the condenser temperature rises and reaches 60°C or 70°C according to the setting of DIP SWITCH number 8 the current arriving to the micro processor is such to cause an immediate and total stop of the machine operation.

NOTE. *The machine will remain in OFF mode for one hour then it will restart automatically. In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTSOFF DEFINITELY.*

To restart the unit after the shutoff caused by the hi condenser temperature, it is necessary to switch OFF and ON the power line main disconnect Switch.

D Electromagnetic sensor

This safety device is housed on top of the Drive Motor and detects - based on Hall Effect principle - the rotating speed and rotating direction of the drive Motor.

Should the rotating speed drop below 1300 r.p.m. the magnitude measured by this device is such to signal to the microprocessor to stop the unit and light-up the YELLOW LED. The same reaction occurs when the drive motor will tend to rotate in the wrong direction (counter-clockwise) or when it doesn't rotate at all.

NOTE. *The machine will remain in OFF mode for one hour then it will restart automatically. In case the unit trips OFF again in alarm for 3 times in 3 hours, the machine SHUTS OFF DEFINITELY. To restart the unit after the shutoff caused by this safety device, it is necessary first to eliminate the cause that has generated the intervention of the device and then switch OFF and ON the power line main disconnect switch.*

E Optical ice level control

The electronic optical ice level control, located into the ice chute has the function to stop the operation of the ice machine when the light beam between the light source and the receiver gets interrupted by the flake ice which accumulates in the chute.

When the light beam is interrupted the Bin Full YELLOW LED located in the front of the P.C. BOARD blinks; in case the light beam gets interrupted for as long as 6 seconds, the ice machine stops with the glowing-up of the 2nd YELLOW LED to monitor the full ice bin situation. The 6 seconds of delay prevents that any minimum interruption of the light beam due to the regular ice chuting through the ice chute may stop the operation of the unit.

As soon as the ice is scooped out (with the resumption of the light beam between the two infrared sensor of ice level control - YELLOW LED blinks fast) 6 seconds later the ice machine resumes its operation with the simultaneous extinguishing the 2nd YELLOW LED.

Resistive values Evaporator probe KTY 10.62

T°C	Rmin	Rmax
-30	1223	1276
-20	1345	1394
-10	1474	1517
0	1611	1650
10	1757	1788
20	1910	1933
25	1990	2010
30	2067	2092
40	2226	2263
50	2395	2442
60	2569	2629
70	2752	2824
80	2941	3027

Resistive values Condenser probe KTY 11.7

T°C	Rmin	Rmax
-30	1236	1301
-20	1358	1422
-10	1489	1547
0	1628	1683
10	1774	1824
20	1929	1972
25	2010	2050
30	2088	2134
40	2249	2308
50	2420	2490
60	2594	2681
70	2779	2880
80	2970	3087

Characteristics of the optical sensor for flakes

Infra-red receiver (Photo transistor)

Maximum voltage Vce	35V
Maximum electricity Ic	50 mA
Collector electricity whereby Ev=1000 1x, Vce=5V	between 1 and 2 mA
Operation temperature	-55°C ÷ +100°C

Infra-red transmitter (Photo diode)

Max. conversion voltage Vr	5V
Maximum electricity If	100 mA
Direct voltage Vr@100mA 25°C	= 1.5V
Operation temperature	-55°C ÷ +100°C

F P.C. BOARD (Data processor)

The P.C. BOARD, fitted in its plastic box located in the front of the unit, consists of two separated printed circuits one at high and the other at low voltage and protected by fuses. Also it consists of five aligned LEDS monitoring the operation of the machine of three jumpers and of input terminals for the leads of the sensor probes as well as input and output terminals for the leads of the ice maker electrical wires. The P.C. BOARD is the brain of the system and it elaborates, through its micro processor, the signals received from the sensors in order to control the operation of the different electrical components of the ice maker (compressor, gear motor, etc.). The five LEDS, placed in a row in the front of the P.C. BOARD, monitor the following situations:

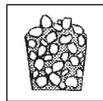
GREEN LED

Unit under electrical power



YELLOW LED

Blinking: I/R beam cut out
Steady: storage bin full



YELLOW LED

Unit shut-off due to a too lo-water level into float tank



RED LED

ON all the time

- Unit shut-off due to a too hi-condensing temperature
- Unit shut-off due to a too lo-ambient temperature $< +1^{\circ}\text{C}$



Blinking

3 minutes start up delay time

YELLOW LED

ON all the time

- Unit shut-off due to the wrong rotation direction of gear motor
- Unit shut-off due to the too lo speed of gear motor

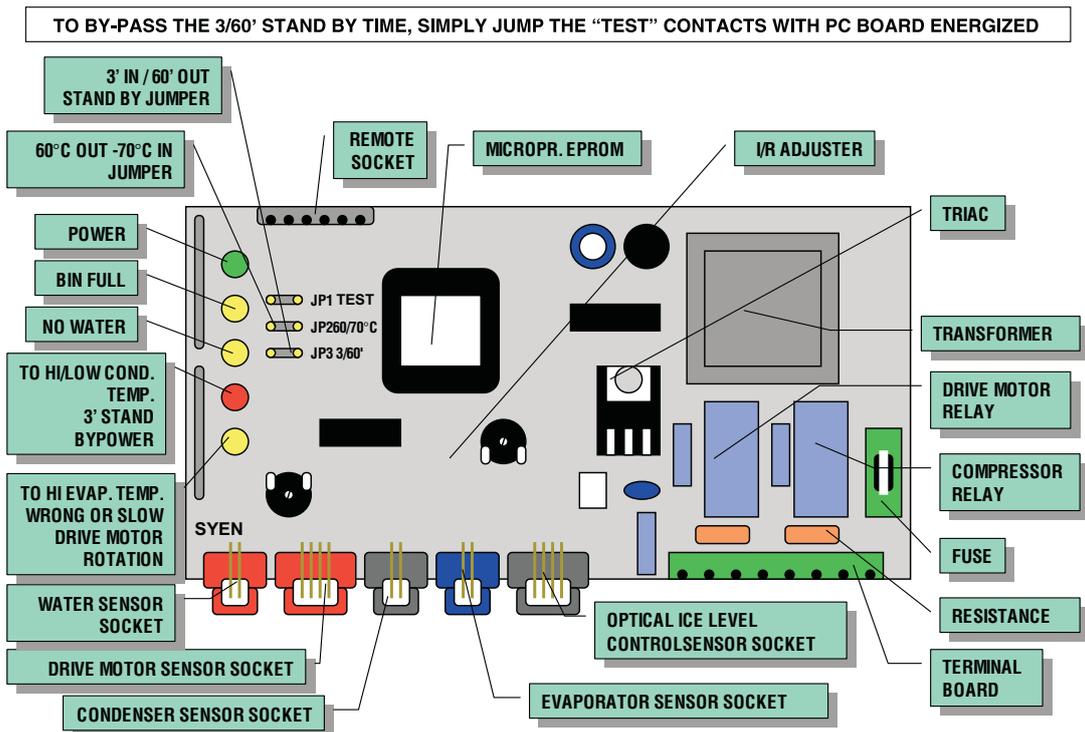
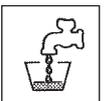


Blinking

- Unit shut-off due to a too hi-evaporating temp. $> -1^{\circ}\text{C}$ after 10 min of operation

YELLOW AND RED LED

- Blinking: Evaporator sensor out of order
- Steady: Condenser sensor out of order



G Jumpers

The Flaker PC Board is equipped by three jumpers: **J1 - TEST:** Used in the factory to energise all the electrical components during the Testing Mode. Used to by-pass the 3' stand by time (just jump the contacts with PC Board under power).

J2 - SYEN / J3 - Pro. El. Ind. - 60/70°C:

Used to set up the CutOut temperature of the condenser sensor:

- Jump OUT = 60°C
- Jump IN = 70°C

J3 - SYEN / J2 - Pro. El. Ind. - 3'/60':

Used to set up the start up delay time:

- Jump IN = 3'
- Jump OUT = 60'

H Float reservoir

The float reservoir consist of a plastic water pan on which is fitted a float valve with its setting screw. The float valve modulate the incoming water flow to maintain a constant water level in the reservoir, level that corresponds to the one in the freezing cylinder to ensure proper ice formation and fluidity.

On the inner side of the reservoir cover are fitted the two water level sensor pins which detects the presence or the shortage of water in the reservoir.

NOTE. It is very important to make sure of the correct fitting of the cover on the reservoir in order to enable the sensor to efficiently control the water situation avoiding undue shutoff interventions.

I Freezing cylinder or evaporator

The freezing cylinder is made of a stainless steel vertical tube on which exterior is wrapped around the cooling coil with the evaporating chamber and in its interior is located the auger which rotates on its vertical axis and it is maintained aligned by the top and bottom bearings. A water seal system is located in the bottom part of the freezer while at the top end is fitted the ice breaker.

The water constantly flowing into the cylinder bottom part, freezes into ice when in contact with the cylinder inner walls. The ice is then lifted up by the rotating auger and compacted and forced out by the ice breaker.

J Eisbrecher

Der Eisbrecher befindet sich im oberen Teil des Freezers und wirkt dem an den Zylinderwänden aufsteigendem Eis entgegen, das auf diese Weise komprimiert wird, so dass ein Teil des darin enthaltenen Wassers beseitigt und das Eis in viele Körnchen gebrochen wird, die in den Behälter befördert werden.

Im Eisbrecher befindet sich das obere Lager, das aus zwei Reihen Rollen aus rostfreiem Stahl besteht, die den von der Schnecke ausgeübten radialen und axialen Belastungen standhalten können.

Dieses Lager ist mit einem speziellen, wasser-abstoßenden Lebensmittelschmierfett geschmiert.

ANMERKUNG. Es wird empfohlen, alle sechs Monate den Zustand des Schmiermittels und des oberen Lagers zu überprüfen.

K Gear motor

The gearmotor is made of a single phase electric motor with permanent capacitor directly fitted on a gear box.

The drive motor rotor is kept aligned on its vertical axis by two ball bearings permanently lubricated. The gear case contains a train of three spur gears with the first one in fiber to limit the noise level. All the three gears are encased in case roller bearings and are covered by lubricant grease (MOBILPLEX IP 44).

Two seal rings, one fitted on the rotor shaft and the other on the output shaft keep the gear case sealed.

The interior can be inspected and serviced by unbolting the two halves of the aluminium gear case housing.

L Fan motor (Air cooled version)

The fanmotor is controlled through the TRIAC of the P.C. BOARD by the condenser temperature sensor. Normally it operates to draw cooling air through the condenser fins.

In cold ambient situation, the fan motor can run at intermittance as the condenser pressure must be kept between two corresponding head pressure values.

M Water regulating valve

This valve controls the head pressure in the refrigerant system by regulating the flow of water going to the condenser.

As pressure increases, the water regulating valve opens to increase the flow of cooling water.

N Compressor

The hermetic compressor is the heart of the refrigerant system and it is used to circulate and retrieve the refrigerant throughout the entire system.

It compresses the low pressure refrigerant vapor causing its temperature to rise and become high pressure hot vapor which is then released through the discharge valve.

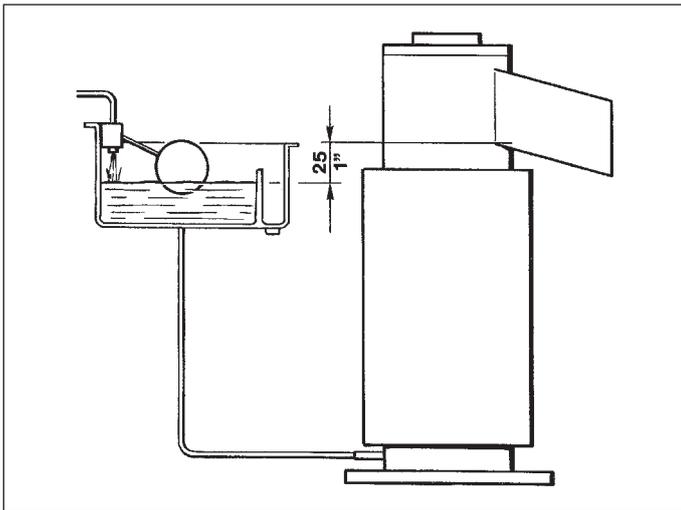
ADJUSTMENT, REMOVAL AND REPLACEMENT PROCEDURES

NOTE. Read the instructions thoroughly before performing any of the following adjustment or removal and replacement procedure.

A Adjustment of the evaporator water level

The correct water level in the freezing cylinder is about 25 mm. below the ice discharge opening. Low water level causes excessive strain inside the freezer assembly due to a faster freezing rate.

When the water level is above or below the correct one, adjustment can be performed by raising or lowering at the measure required, the water reservoir and its mounting bracket.

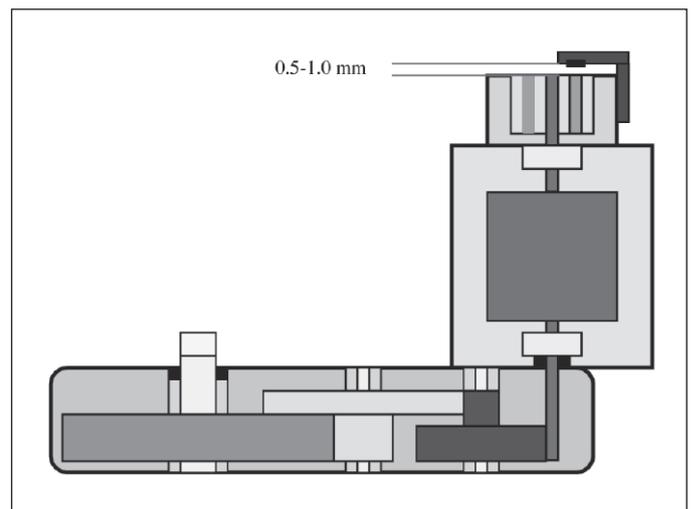


- 1 To Raise or Lower the water level:
 - a Loosen and remove the screw securing the mounting bracket of the water reservoir to the unit cabinet and raise the water reservoir to the correct level.
 - b Thread the mounting screw in the corresponding hole and tighten it.
- 2 For the reduction the water level as given above, and lower the bath, as soon as it is released from the casing.

WARNING. Be sure the electrical power supply circuit breaker and the inlet water supply are OFF, before starting any of the following Removal and Replacement procedures as a precaution to prevent possible personal injury or damage to the equipments.

B. Replacement of the gearmotor magnetic sensor

- 1 On F80, F120 remove the front/top and side/rear panels top and left side panels.
2. Unloose the three screws securing the plastic cover to the top of the gear motor and remove it.
3. Unloose the two screws securing the magnetic sensor to the plastic housing and withdraw it from its seat.
4. Trace the gear motor magnetic sensor terminal plug on the rear side of the control box (red with four terminal pins) and draw it out from its socket by carefully slackening the fastening tie.
5. To install the replacement gear motor magnetic sensor follow the above steps in reverse.



C Replacement of the auger, water seal, bearings and coupling

- 1 Remove the panels.
- 2 Follow the steps at item H to remove the ice spout.
- 3 On model F120 unloose and remove two screws and washers holding tight the spout bracket to the freezing cylinder.
- 4 On model F120 grasp the wire cap hook at the top of the freezer and pull out the auger, attached cap and icebreaker from the top of the freezer.

NOTE. *If the auger cannot be pulled out, proceed to steps 10 and 11 of this paragraph, to gain access to the auger bottom. Then, with a rowhide mallet or placing a piece of wood on the bottomend of the auger, tap this bottom to break loose the auger and be able then to pull it out as per step 4 above.*

D Replacement of the gear motor assy

- 1 Remove the front/top and side/rear panels.
- 2 Remove the three/four bolts and washers securing the gear reducer base to the unit-chassis, then remove bolts and lock washer-which attach the bottom of the aluminium adaptor to the gear reducer case cover.
- 3 Follow the steps of item E to remove the gear motor magnetic sensor.
- 4 Trace and disconnect the electric wires leads of the drive motor. Lift and remove the entire gear motor assembly.

E Change of the water level sensors in the bath

- 1 Remove the upper plate
- 2 Loosen the fastening nuts of the ring cable lugs of both the rod made of stainless steel – water sensors -, which are found on the cover of the swimming pool
- 3 Search for the terminal of the lowest water sensor with two red mandrels in the back part of the switch box and pull them out of their position by pressing on the fastening strap.
- 4 Proceed with the installation of the new lowest sensor in the reverse order.

F Change of the control card

- 1 Remove the front upper plate
- 2 Search for the terminal of the single sensor with two red mandrels in the back part of the switch box and pull them out of their position through pressing on the fastening strap.
- 3 Pull off the terminals for the electrical connections of the back part of the control card and then remove the whole control card by loosening the four screws, with which it is fastened in the electrical switch box made of plastic
- 4 Proceed with the installation of the new lowest sensor in the reverse order

G Change of the ice discharge opening

- 1 Loosen the screws and remove the upper plate.
- 2 Remove the wing nuts and the take the opening from the ice removal canal. Work on the optical reading device, so that these are not damaged.
- 3 The two shells, with which the polystyrene bowls in the upper part of the evaporators are fastened, and remove both the insulating bowls.
- 4 Pull out the opening made of stainless steel from its upper bronze part with the F 125 models, for the other models loosen both bolts, with which they are fastened in the ice-breaker.
- 5 For Model F125 loosen both bolts, with which the bronze opening is fastened to the evaporator and free it.

NOTE. *In F 125 and F 80 models inspect the rectangular rubber seal of the nozzle and, if damaged, replace it.*

- 6 Proceed with the installation of the new opening in the reverse order.

H Replacement of the screw, seal ring, bearings and coupling

- 1 Loosen the screws and remove the front upper plate.
- 2 Change the procedure described in Point H for the removal of the ice discharge opening
- 3 Loosen and remove both screws, which are used to fasten the clip of the opening on the evaporator.
- 4 Grasp the ring in the upper part of the icebreakers of the evaporators and pull upwards hard to remove the unit icebreaker

NOTE. *If you are unable to remove the auger assembly / icebreaker from above, switch to perform as described in paragraphs 10 and 11 of this paragraph in order to act on the bottom of the cochlea. Using a mallet of wood or plastic, beat on the lower end of the auger in order to loosen and eject it from the top of the evaporator.*

- 5 For the F125 Model, remove the ring which is used to fasten the cover on the icebreaker, with the Seeger tongs. For the other models, a screw driver is used for removing the cover.
- 6 Loosen and remove the head bolt used to fasten the unit icebreaker storage on the screw (augur) and pull out the icebreaker unit from the screw.

- 7 Remove the remaining grease from the icebreaker unit and examine and change the O R seal, in case it is not alright.
- 8 Test the storage in the icebreaker carefully. Immediately change if there are signs of the start of wear and tear or lacking grease.

WARNING. *The upper bearing works in critical conditions as regards its lubrication because it will insert within the icebreaker where you normally form a considerable condensation. E 'exhaustive use of dietary fat and water-repellent in order to provide adequate lubrication to the upper bearing.*

- 9 Pull the brass rotating ring of the seal system from the lower part of the screw.
For the F125 Model , pull the brass rotating ring of the seal system from the lower part of the screw, the remaining models of the steel ring must be pulled out with a spring.

NOTE. *Whenever you disassemble the auger to make a few checks or replacement, take care not to let dirt inside the evaporator and especially that these should not be deposited on the surface in graphite seal ring. If there were any doubts, proceed without delay to the complete replacement of the seal ring.*

- 10 Loosen and remove the three/four bolts, which are used to fasten the aluminum container underneath the evaporator.
- 11 Lift the evaporator and raise it from its container. After that push a wooden or plastic tool with a suitable knife and length in the upper part of the evaporator, so that it can be pressed out from the lower end. It is necessary in case a wooden hammer is used.

12 Press and remove the Super Flakes Ice Model with the sheets, from two screws pulled from the lower edge of the brass rings of the lower storage casing.

NOTE. *Is a good practice to replace both the ring of the mechanical seal that the bearings, upper and lower, as well as O-rings each time it is disassembled the evaporator assembly. For this purpose there is a kit of these parties also accompanied by a tube of grease food and water repellent.*

13 Pull the components of the drive coupling from aluminum container out.

14 Control the state of both half couplings. Immediately exchange if there is wear and tear.

15 Install the lower storage in its bronze casing and put it in such a way that the white plastic ring shows on the top.

16 Install the upper storage of the icebreakers. The flat part starts with the radial part. The surfaces must be mounted upward.

17 Lubricant (grease) on the upper part. Then mount the roll cage with the smaller openings at the top, to allow a little movement between the plastic cage and the flat surfaces of the lower storage part (see diagram).

18 Grease and then mount the equalizing disc made of steel

19 After changing the O-Ring seal in the icebreaker, install the icebreaker on top of the screw and fasten it with the upper bolt.

20 Install the screw icebreaker unit in the evaporator. Use the previous points in a reverse order.

I Change of the gear motor

- 1 For the F125 Model the front/upper and the side/back plate
- 2 Loosen the three-four screws, which are used to fasten the evaporator on the upper casing.
- 3 Remove the sensors for the engine rotating direction according to the instructions in Point B.
Loosen the screws which are used to fasten the gear motor on the framework.
- 4 Interruption of the supply of power of the motor through the electrical equipment. The gear motor is now released and can be ex-reverse
- 5 To install the new gear motor, use the process in the reverse order.

J Change of the ventilator

- 1 For the F125 Model the front/upper and the side/back plate
- 2 Loosen the nuts and search and pull out the yellow/green grounding cable. The mandrel for the connection of the electrical cable of the ventilator.
- 3 For the F 125 Model, loosen the bolts which are used to fasten and take out the ventilator unit on the base of the device.

NOTE. *When installing a new fan motor check that the blades do not touch anything and turn freely.*

K Change of the driers

- 1 For the F 125 Model front/upper and the side/back plate
- 2 Remove the cooling agent from the system and let it flow into a particular container, which can be later recycled after a corresponding cleaning.
- 3 The cooling agents guides from both ends (for the F 125 Model, weld the capillary tube on a side of the drier).
- 4 Remove the seals to both ends for the mounting of the new driers and wearing the pipes of the cooling agent.
- 5 Carefully rinse the cooling agent circulation for humidity and remove the non-condensable gases after installing the new driers.
- 6 Fill the cooling agent circulation with the right amount of cooling agent (see type) and examine, whether appearances* with the level smelted* places are available.
- 7 Mount the previously removed plate again.

L Change of the evaporator

- 1 Follow the instructions of Point H for the removal of the ice discharge opening.
- 2 Remove the *shell of the connection of the water entry* in the evaporator and draw out the *pipe. Empty the water found in a container.
- 3 Pull out the sensor pipe of the evaporator as in Point B.
- 4 Remove the cooling agent from the system and let it run into a particular container, so that it can be recycled later after a corresponding cleaning.
- 5 Welding and separate the capillary tube and the collection/sucking unit from the outflow pipe of the evaporator.
- 6 Loosen the three-four bolts, which are used to fasten the evaporator on the upper casing of the gear motor.
- 7 Remove the evaporator of the gear motor and if necessary, remove the aluminum container* by loosening the three-four bolts of the evaporator.

NOTE. Replace the dryer filter whenever the refrigerant circuit is opened. Do not apply the new filter dehumidifier until all repairs or replacements have been made.

- 8 For the installation of the new evaporator the process used in a reverse order.

NOTE. Carefully purged the refrigerant circuit to remove moisture and non-condensable gases after the replacement of the evaporator.

M Change of the air-cooled condenser

- 5 For the F 125 Model the front/upper and the side/back plate
- 2 Remove the sensor pipe from the cooling bulb of the condensers.
- 3 Loosen the bolts, which are used to fasten it on the base/frame.
- 4 Remove the cooling agent from the system and let it flow into a particular container, to be able to recycle it later after the corresponding cleaning.
- 5 Weld the cooling agent pipes from both ends.

NOTE. Replace the dryer filter whenever the refrigerant circuit is opened. Do not apply the new filter dehumidifier until all repairs or replacements have been made.

- 6 For the installation of the new condensers, use the process in a reverse order

NOTE. Carefully purged the refrigerant circuit to remove moisture and non-condensable gases after the replacement of the condenser.

N Change of the water-cooled condensers

- 1 For the F 125 Model the front/upper and the side/back plate
- 2 Remove the sensing probe from the condenser.
- 3 Loosen and remove the bolts with which it is fastened on the base.
- 4 Unscrew the pipe terminal and pull the plastic pipe of the two ends of the condensers.
- 5 Remove the cooling agent from the system and let it flow into a particular container, to be able to recycle it later after the corresponding cleaning.
- 6 Welding the cooling agent pipes from the two ends of the condenser.

NOTE. Replace the dryer filter whenever the refrigerant circuit is opened. Do not apply the new filter dehumidifier until all repairs or replacements have been made.

- 7 For the installation of the new condensers use the process in reverse order.

NOTE. Carefully purged the refrigerant circuit to remove moisture and non-condensable gases after the replacement of the condenser.

O Exchange of the regulating valve (water-cooled equipment)

- 1 For the F 125 Model the front/upper and the side/back plate
- 2 Close the water stop valve and the supply pipes for the regulating valve from the back part of the device.
- 3 Loosen the pipe terminal and remove the plastic pipe from the pipe holder at the exit of the regulating valve.
- 4 Loosen the nuts, which are used for fastening the regulating valve in the frame of the equipment.
- 5 Remove the cooling agent from the system and let it flow in a particular container, to be able to recycle it later after the corresponding cleaning

- 6 Try the capillary tube of the regulating valve and weld it onto the cold circulation. Then remove it from the device.

NOTE. Replace the dryer filter whenever the refrigerant circuit is opened. Do not apply the new filter dehumidifier until all repairs or replacements have been made.

- 7 For the installation of the new condensers use the process in reverse order.

NOTE. Carefully purged the refrigerant circuit to remove moisture and non-condensable gases after the replacement of the condenser.

NOTE. The water flow passing through the pressure valve must be adjusted using the screw in the upper part of its stem until you have a condensing pressure of 14 bar.

P Change of the compressor

- 1 For the F 125 Model the front/upper and the side/back plate
- 2 Remove the cover and pull out the electrical cable from the terminals of the compressor.
- 3 Remove the cooling agent from the system and let it flow into a particular container, to be able to recycle it later after the corresponding cleaning
- 4 Weld the conveyor pipe as well as the suction pipe of the compressor.
- 5 Loosen the screws, which is used to fasten it to the base, and remove the compressor from the socket of the equipment.
- 6 For the F125 Model, weld the working/filling pipe, to be able to weld it on the new compressor.

NOTE. *Replace the dryer filter whenever the refrigerant circuit is opened. Do not apply the new filter dehumidifier until all repairs or replacements have been made.*

- 7 For the installation of the new compressors, use the process in a reverse order

NOTE. *Carefully purged the refrigerant circuit to remove moisture and non-condensable gases after the replacement of the condenser.*

TECHNISCHE DATEN DES EISFLOCKENBEREITERS

MODELLO MODEL MODELL	VOLTS	COMPRESSORE COMPRESSOR KOMPRESSOR	REFRIGERANTE REFRIGERANT KÄLTEMITTEL	CARICA REFRIGERANTE REFR. CHARGE BEFÜLLUNG MIT KÄLTEMITTEL	CAPILLARE CAPILLAR KAPILLARROHR	POTENZA ASSORBITA POWER AUFGENOMME- NE LEISTUNG	ASS. MARCIA AMPS AMP. BETRIEB	ASS. AVVIAMENTO START AMPS AMP. START	ASSORBIMENTO MOTORIDUTTORE AMPS MOTOREDUCT. AUFNAHME GETRIE- BEMOTOR	CONSUMO ELETTRICO POWER CONS. STROMVERBRAUCH
F80 A/W	230/50/1	ELECTROLUX GL90TB R134A	R134a	300/300 gr.	3000mm. D int. 0.90 D: 2.2mm	400W	2.6A	11A	0.200A	9.6 KWH/24 HR
F125 A/W	230/50/1	UNITE HERMETIQUE GP14 TB R134A	R134A	400/300gr	2500mm. D int. 1.00 D: 2.2mm	480W	3.2A	18A	0.200A	11.5 KWH/24 HR

WIRING DIAGRAM F80

AIR AND WATER COOLED

220-240/50/1

LED AUGABEN	LEDS INDICATIONS
L1	Power on
L2	Bin full
L3	No water
L4	Too high cond. temp
L5	3' stand by
	Wrong rotation
	too high evap. temp

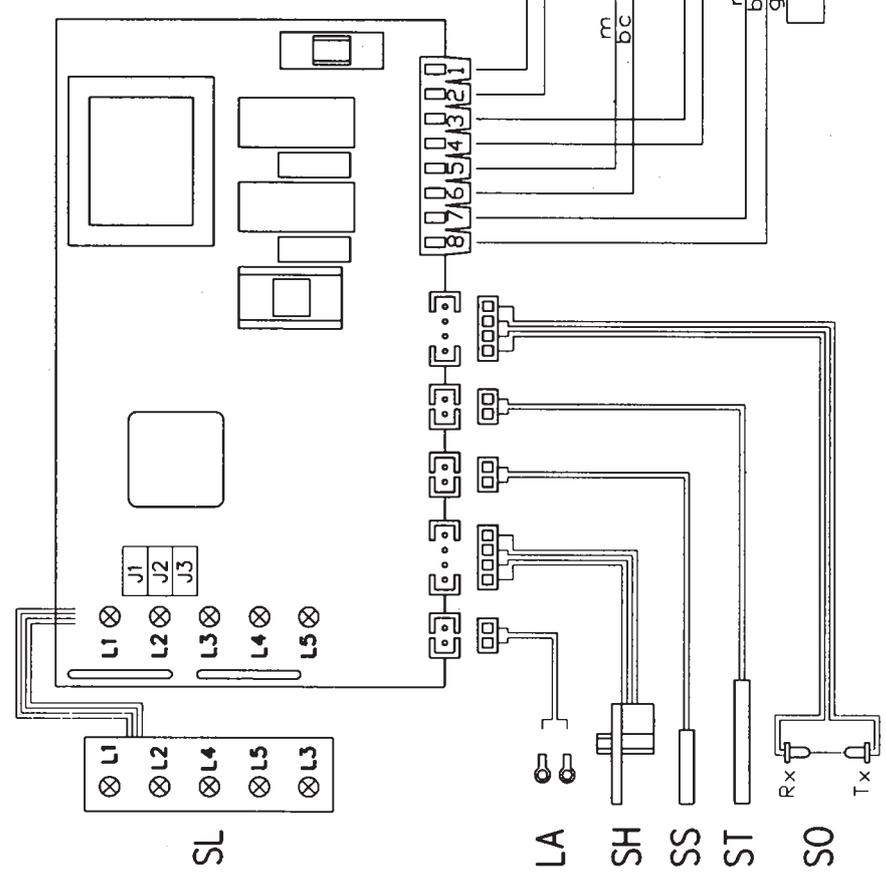
LED AUGABEN	LEDS INDICATIONS
L1	Ausschaltung
L2	Behälter voll
L3	Fehlendes Wasser
L4	Hochtemperatur
L5	Kondensator
	Schnecke sitzt fest

LEDS INDICATIONS	LEDS INDICATIONS	LEDS INDICATIONS
Power on	AN ON	AUS OFF
Bin full	Test	Normal Betrieb
No water	Allarme 70°C	Normal operation
Too high cond. temp	70°C alarm (air cooled)	Allarme 60°C
3' stand by	Anlaufverzögerung 3' Aus	60°C alarm (water cooled)
Wrong rotation	Anlaufverzögerung 3' delay off	Anlaufverzögerung 3' Aktiv
too high evap. temp		3' delay on

LEGENDE	LEGENDA
MV	Ventilatoren
MR	Schrittmotor
MC	Verdichter
SC	Platine
SL	Led Schalter
LA	Wasserniveau
SH	Rotationfühler
SS	Kondensator Fühler
ST	Verdampfer Fühler
SO	Optischer Sensor
CA	Anschlusskabel
CT	Steckverbinder
F	Verriegelung
CS	S-Start Kondensator

LEGENDA	LEGENDA
Fan	Start Condenser
Gearmotor	Lock-Cable
Compressor	Terminal for cables
Electronic card	Power cable
Led card	Fotoswitch system
Water level	Evaporator probe
Rotation probe	Condenser probe
Condenser probe	Rotation probe
Evaporator probe	Water level
Fotoswitch system	Led card
Power cable	Electronic card
Terminal for cables	Compressor
Lock-Cable	Gearmotor
Start Condenser	Fan

KABEL FARBEN	CABLES COLORS
v = grün	v = green
r = rosa	r = pink
m = braun	m = brown
bc = blau	bc = light blue
gv = gelbe/grün	gv = yellow/green



WIRING DIAGRAM F80

AIR AND WATER COOLED

220-240/50/1

LED AUGABEN

- L1
- L2
- L3
- L4
- L5

- Water solenoid valve
- Pressure control
- Gearmotor
- Compressor
- Electronic card
- Led card
- Water level
- Rotation probe
- Condenser probe
- Evaporator probe
- Fotoswitch system
- Power cable
- Terminal for cables
- Lock-Cable
- Start Condenser

LEGEND

- Wasser Ventil
- Pressostat
- Schrittmotor
- Verdichter
- Platine
- Led Schalter
- Wasserniveau
- Rotationfühler
- Kondensator Fühler
- Verdampfer Fühler
- Optischer Sensor
- Anschlusskabel
- Steckverbinder
- Verriegelung
- Start Kondensator

LEGEDE

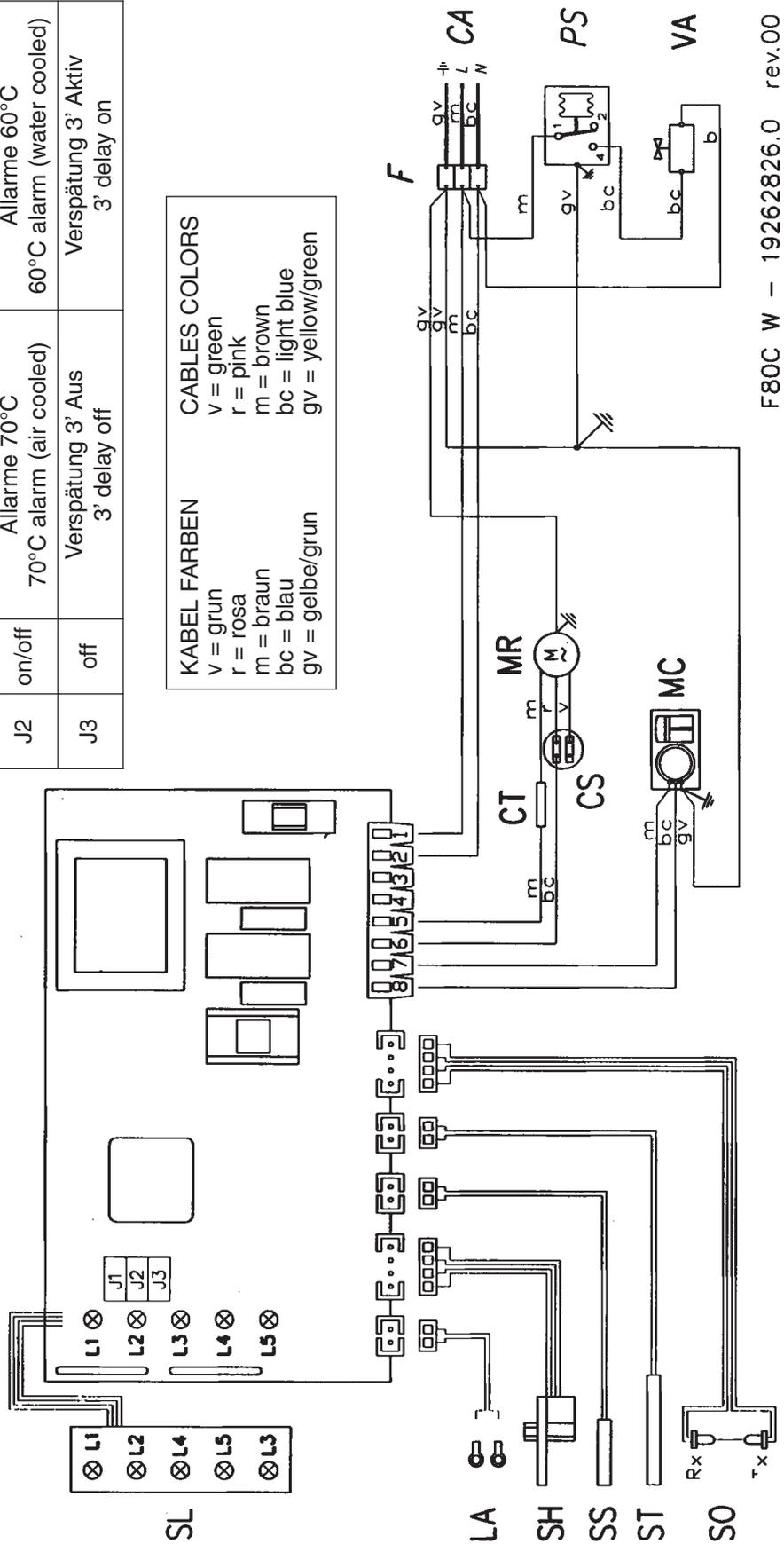
- VA
- PS
- MR
- MC
- SC
- SL
- LA
- SH
- SS
- ST
- SO
- CA
- CT
- F
- CS

LED INDICATIONS

- Power on
- Bin full
- No water
- Too high cond. temp
- 3' stand by
- Wrong rotation
- too high evap. temp

PONTE JUMPER	STANDARD SET	AN ON	AUS OFF
J1	off	Test	Normal Betrieb Normal operation
J2	on/off	Allarme 70°C 70°C alarm (air cooled)	Allarme 60°C 60°C alarm (water cooled)
J3	off	Verspätung 3' Aus 3' delay off	Verspätung 3' Aktiv 3' delay on

KABEL FARBEN	CABLES COLORS
v = grün	v = green
r = rosa	r = pink
m = braun	m = brown
bc = blau	bc = light blue
gv = gelber/grün	gv = yellow/green



WIRING DIAGRAM F125

AIR AND WATER COOLED

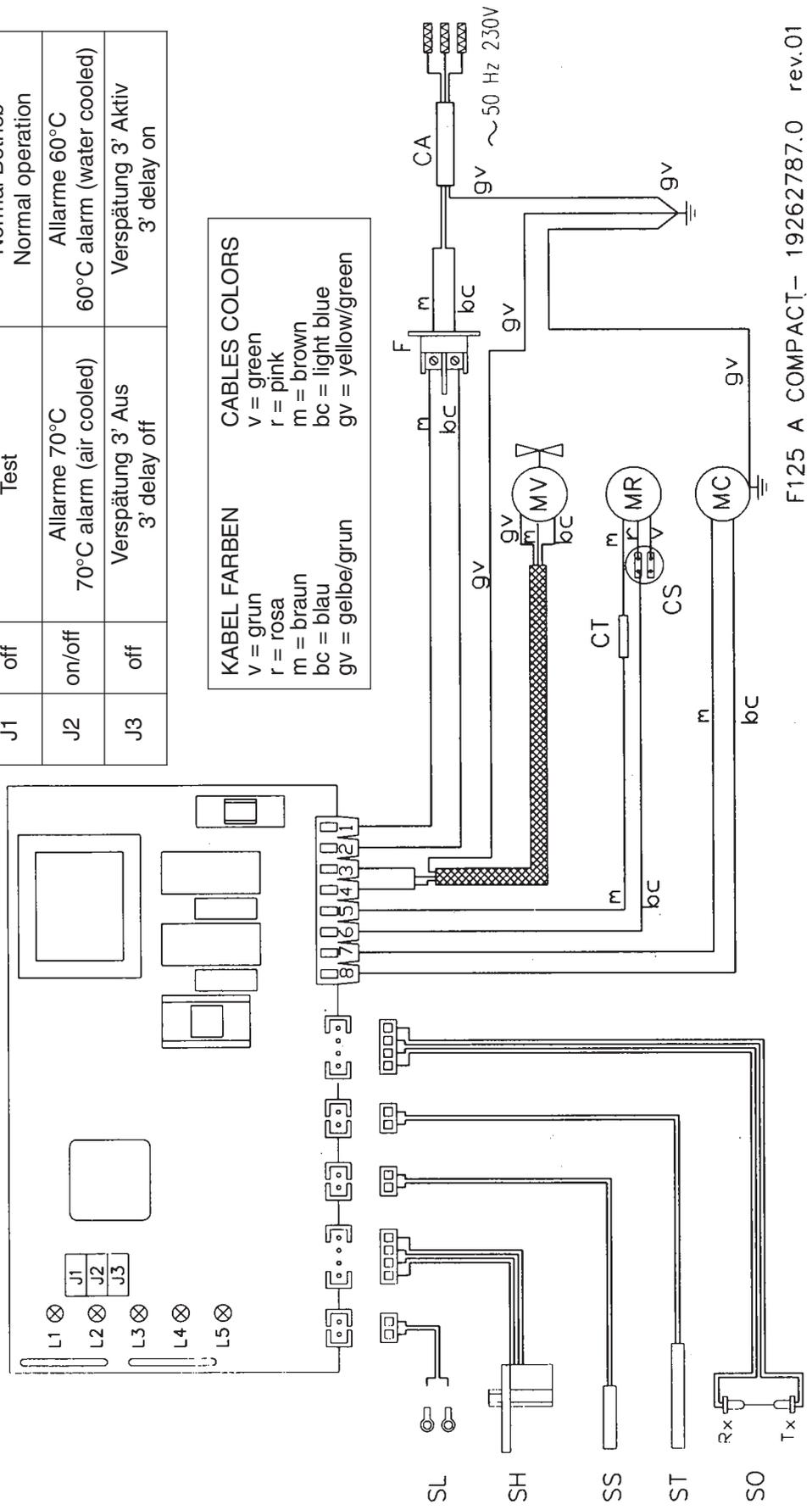
220-240/50/1

LED AUGABEN	LEDS INDICATIONS
L1 Ausschaltung	Power on
L2 Behälter voll	Bin full
L3 Fehlendes Wasser	No water
L4 Hochtemperatur	Too high cond. temp
L5 Kondensator	3' stand by
L5 Schnecke sitzt fest	Wrong rotation
	too high evap. temp

LEGEND	LEGENDE
Fan	Ventilatoren
Gearmotor	Schrittmotor
Compressor	Verdichter
Electronic card	Platine
Led card	Led Schalter
Water level	Wasserniveau
Rotation probe	Rotationfühler
Condenser probe	Kondensator Fühler
Evaporator probe	Verdampfer Fühler
Fotoswitch system	Optischer Sensor
Power cable	Anschlusskabel
Terminal for cables	Steckverbinder
Lock-Cable	Verriegelung
Start Condenser	Start Kondensator

PONTE JUMPER	STANDARD SET	AN ON	AUS OFF
J1	off	Test	Normal Betrieb Normal operation
J2	on/off	Allarme 70°C 70°C alarm (air cooled)	Allarme 60°C 60°C alarm (water cooled)
J3	off	Verspätung 3' Aus 3' delay off	Verspätung 3' Aktiv 3' delay on

KABEL FARBEN	CABLES COLORS
v = grün	v = green
r = rosa	r = pink
m = braun	m = brown
bc = blau	bc = light blue
gv = gelber/grün	gv = yellow/green



WIRING DIAGRAM F125

AIR AND WATER COOLED

220-240/50/1

LEGENDE

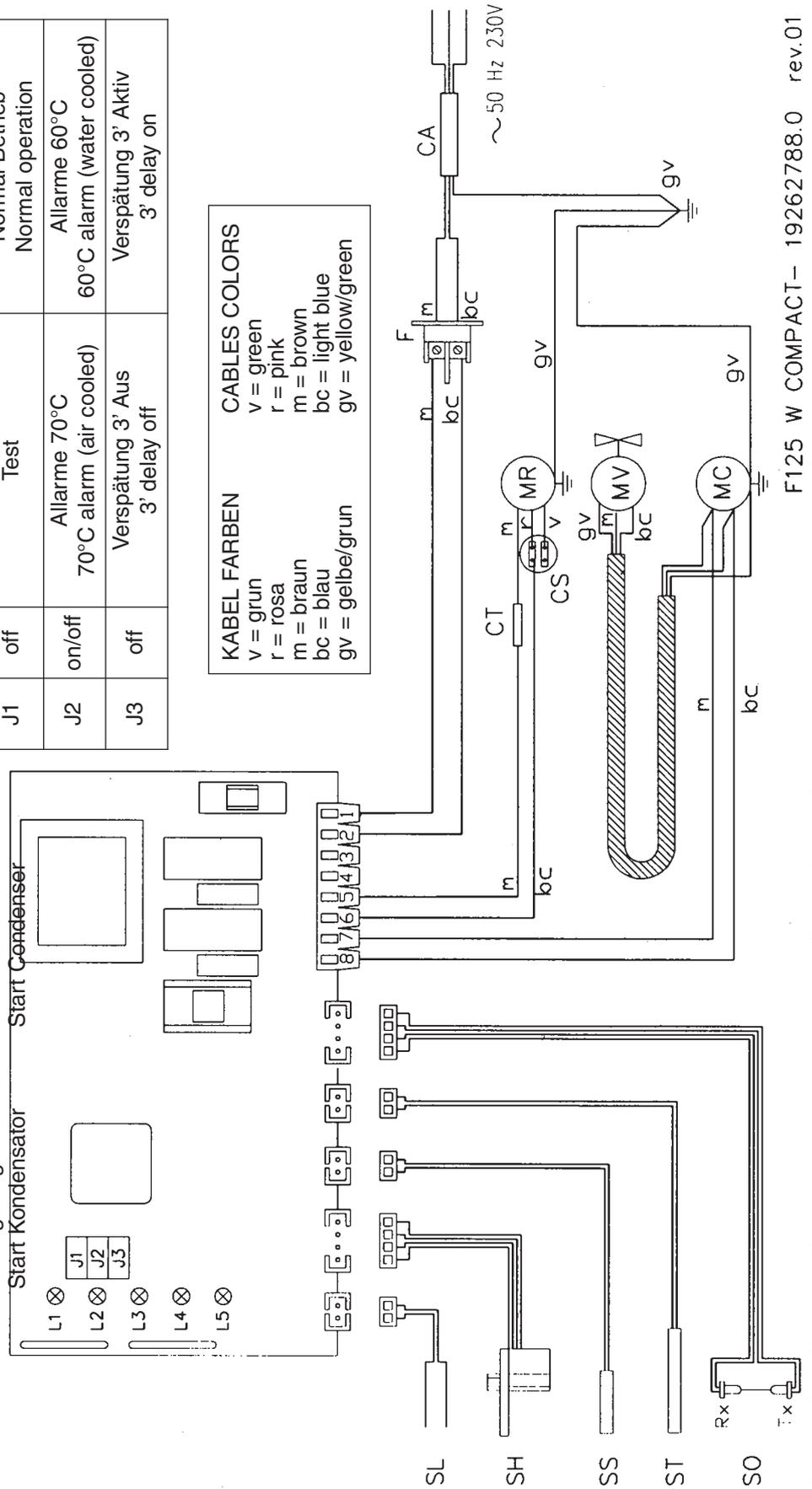
- Water solenoid valve
- Pressure control
- Gearmotor
- Compressor
- Electronic card
- Led card
- Water level
- Rotation probe
- Condenser probe
- Evaporator probe
- Fotoswitch system
- Power cable
- Terminal for cables
- Lock-Cable

LEGENDE

- Wasser Ventil
- Pressostat
- Schrittmotor
- Verdichter
- Platine
- Led Schalter
- Wasserniveau
- Rotationfühler
- Kondensator Fühler
- Verdampfer Fühler
- Optischer Sensor
- Anschlusskabel
- Steckverbinder
- Verriegelung

PONTE JUMPER	STANDARD SET	AN ON	AUS OFF
J1	off	Test	Normal Betrieb Normal operation
J2	on/off	Allarme 70°C 70°C alarm (air cooled)	Allarme 60°C 60°C alarm (water cooled)
J3	off	Verspätung 3' Aus 3' delay off	Verspätung 3' Aktiv 3' delay on

KABEL FARBEN	CABLES COLORS
v = grün	v = green
r = rosa	r = pink
m = braun	m = brown
bc = blau	bc = light blue
gv = gelb/grün	gv = yellow/green



ANALYSE DER FEHLER UND FUNKTIONSTÖRUNGEN

SYMPTON	POSSIBLE CAUSE	SUGGESTED CORRECTION
Unit will not run No LED lighted-on	Blown fuse in P.C.Board Master switch in OFF position Inoperative P.C.Board Loose electrical connections	Replace fuse & check for cause of blown fuse Turn switch to ON position Replace P.C.Board Check wiring
Bin full yellow LED glows with no ice in the bin No water yellow LED glows Red-alarm LED glows	Inoperative or dirty ice level control Shortage of water Water too soft High head pressure	Replace or clean ice level control See remedies for shortage of water. Install a mineral salt metering device Dirty condenser. Clean INOPERATIVE fan motor. Replace
Red-alarm LED blinks Reverse rotation yellow LED blinks	Ambient temperature too low 3' stand by Too hi evap. temperature Shortage or lack of refrigerant Inoperative evaporator sensor	Move unit in warmer location None - Wait the elapsed of 3' Check and charge refrigerant system Replace
Reverse rotation yellow LED glows	Gear motor turns on reverse Too low gear motor rotating speed Drive motor doesn't turn Magnetic cylinder loose its magnetic charge	Check stator winding and capacitor Check rotor bearings, freezer bearings and interior of freezer for scores. Replace whatever worn or damaged. Check for power, open circuit, etc. Replace magnetic cylinder.
Water yellow LED and red LED ON (steady) together	Inoperative Condenser Sensor	Replace it.
Water yellow LED and red LED blink together	Inoperative Evaporator Sensor	Replace it.
Compressor cycles intermittently	Low voltage Non-condensable gas in system Compressor starting device with loose wires	Check circuit for overloading Check voltage at the supply to the building. If low, contact the power company Purge the system Check for loose wires in starting device
Low ice production	Capillary tube partially restricted Moisture in the system Low water level in the freezer Shortage of refrigerant Pitted or stained auger surface	Blow charge, add new gas & drier, after evacuating system with vacuum pump Same as above Adjust to approx 20 mm below ice spout Check for leaks & recharge Clean or replace auger

SYMPTOM	POSSIBLE CAUSE	SUGGESTED CORRECTION
Wet ice	Ambient temperature too high Under or overcharge of refrigerant High water level in the freezer Faulty compressor Worn out of the auger	Move unit to cooler location Recharge with correct quantity Lower to approx. 20 mm below ice spout Replace Replace
Machine runs but makes no ice	Water not entering in the freezer Drive motor or gear stripped Moisture in the system	Air lock in feed line to freezer. Vent it Clogged feed line to freezer. Clean it Check repair or replace Purge, replace drier and re-charge
Water leaks	Water seal leaking Water feed line to freezer leaking Float valve not closing Spout leaking	Replace water seal Check and fasten hose clamp Check and adjust float valve setting screw Tighten screws holding the spout
Excessive noise or chattering	Mineral or scale deposit on auger and inner freezer walls Low suction pressure Water feed line to freezer clogged Low water level into freezer Worn freezer bearings	Remove and manually polish auger and inner walls of freezer barrel using emery paper Add refrigerant to rise suction pressure Vent and clean it Adjust to approx. 20 mm below ice spout Check and replace
Gear motor noise	Worn rotor bearings Shortage or poor lubricant in gear case Gear case bearings and racers worn out	Check and replace Check for proper lubr. opening gear case. Top of gears must be covered with lubr. Check and replace worn parts
Shortage of water	Strainer at water inlet fitting clogged Float reservoir water nozzle clogged-up	Remove strainer and clean Remove float valve and clean nozzle

MAINTENANCE AND CLEANING INSTRUCTIONS

A GENERAL

The periods and the procedures for maintenance and cleaning are given as guides and are not to be construed as absolute or invariable. Cleaning, especially, will vary depending upon local water and ambient conditions and the ice volume produced; and, each icemaker must be maintained individually, in accordance with its particular location requirements.

B ICEMAKER

The following maintenance should be scheduled at least two times per year on these icemakers.

- 1 Check and clean the water line strainer.
- 2 Remove the cover from the float reservoir - care to do not damage the two water sensors - and depress the float to make sure that a full stream of water enters into the reservoir. If not gently remove the float valve from its reservoir bracket than clean the hole of the nozzle.
- 3 Check that the icemaker is levelled in side to side and in front to rear directions.
- 4 Check that the water level in the water reservoir is below the overflow but high enough that it does not run out of the spout opening.
- 5 Clean the water system, water reservoir and the interior of freezing cylinder using a solution of cleaner.
Refer to procedure C cleaning instructions and after cleaning will indicate frequency and procedure to be followed in local areas.

NOTE. *Cleaning requirements vary according to the local water conditions and individual user operation.*

- 6 If required, polish the two sensor rods secured to the float reservoir cover, heavy scale sediment on them can be removed with the help of a bit of cleaner.
- 7 With the ice machine and fan motor OFF on air cooled models, clean condenser using vacuum cleaner, whisk broom or non metallic brush taking care to do not damage the condenser/ambient temperature sensor.
- 8 Check for water leaks and tighten drain line connections. Pour water down bin drain line to be sure that drain line is open and clear.
- 9 Check the ice level control sensor to test shut-off. Close the bottom of the ice chute and wait till it is completely full of ice so to cut off the light beam for at least 6 seconds. This should cause the immediate blinking of the Bin Full YELLOW LED located in the front of P.C. Board and, 6 seconds later, the total stopping of the ice maker with the simultaneous light up of the same LED (steady). Within few seconds from the removal of the ice between the sensor lights the ice maker resume its operation.

NOTE: *The ice level control uses devices that sense light, therefore they must be kept clean enough so they can "see". Every three months remove the optical system then clean/wipe the sensing "eyes" with a clean soft cloth.*

- 10 Check for refrigerant leaks and for proper frost line, which should frost as far as approx. 20 cm (8") from the compressor.
- 11 When doubtful about refrigerant charge, install refrigerant gauges on corresponding service valves and check for correct refrigerant pressures.
- 12 Check that fan blades move freely and are not touching any surfaces.

13 Remove the retaining ring and the hook and cap from the top of the freezer assembly then inspect the top bearing, wipe clean of all grease and apply a coating of food grade water proof grease.

NOTE. It is recommended to use only food grade and waterproof grease to lubricate the freezer top bearing.

14 Check the quality of ice.

NOTE. It is not abnormal for some water to emerge from the ice spout with the flaker ice.

Ice flakes should be wet when formed, but will cure rapidly to normal hardness in the bin.

C. CLEANING INSTRUCTIONS OF WATER SYSTEM

- 1 Switch OFF the Master disconnect switch on the power line.
- 2 Remove all ice stored in the bin to prevent it from getting contaminated with the cleaning solution.
3. Shut close the water shutoff valve on water line.
- 4 Remove the top panels to gain access to the water reservoir.
5. Remove the float reservoir cover and with a piece of copper wire short the two metal pins of the water level sensor.

NOTE. Put one or both of the water sensor on the casing of the equipment, because in this way through the condenser sensor voltage will be transferred and the equipment will be switched off through that due to high temperature.

- 6 Place a water pan under the freezer water inlet port, disconnect the water hose from this port and allow the water from the freezer to flow into the pan. Then refit the water hose to the freezer water inlet port.
- 7 Prepare the cleaning solution in a plastic container.
- 8 Pour the cleaning solution into the water reservoir.
- 9 Wait till the machine starts to discharge ice, then continue to slowly pour the cleaning solution into the water reservoir taking care to maintain the level just below the overflow.

NOTE. *The ice produced with the decalcification solution is yellowish and smooth. In this phase, there are loud noises from the freezer due to the rubbing between the rising ice and the evaporator walls. In this case, it is recommended that the equipment should be switched off for some minutes, so that the decalcification solution in the freezer can be released.*

10 When all the cleaning solution has been used up, open the water shutoff valve to allow new fresh water to flow into the reservoir. Let the unit to continue to run until the ice resumes the normal colour and hardness.

11 Stop the icemaker and pour warmwater on the ice deposited into the storage bin to melt it up.

ATTENTION use ice produced with the cleaner solution. Be sure none remains in the bin.

12 Left the unit running for approx 10 minutes then remove the copper wire used to jump the two sensors for the water level and place back correctly the cover on the float reservoir.

Bartscher