



**NEW AC SERIES**

**SECOND HALF**

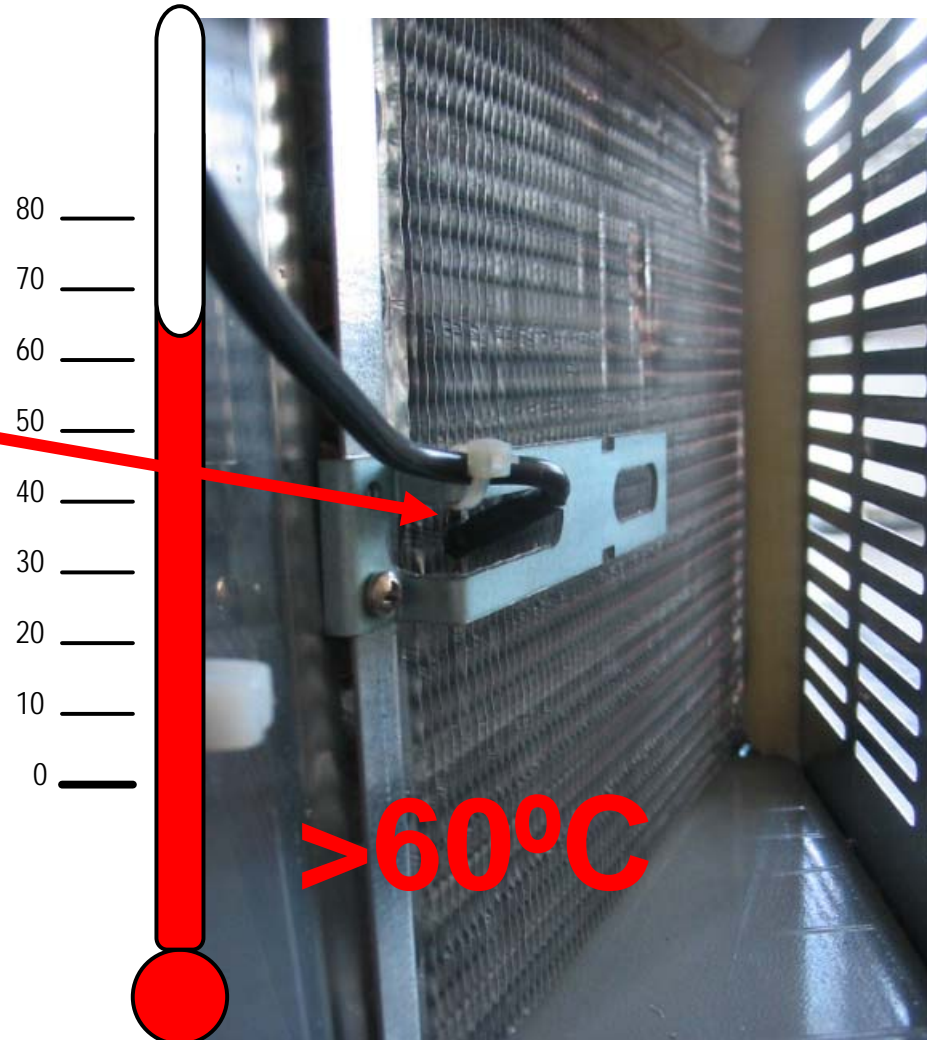


**NEW AC SERIES**

**MAINTENANCE**

**MAINTENANCE**

When condensing temperature is more than 60°C, the condenser sensor send a signal to the Cleaning/Maintenance Remind Board to .....



**MAINTENANCE**

.....activate/energize  
the RED Light with  
machine still in  
operation.



**MAINTENANCE**

This is the signal  
to clean the air  
cooled  
condenser filter  
by taking it out  
from the front  
panel.



**MAINTENANCE**

In case the RED  
Light is blinking  
slow (0,5" ON -  
3" OFF) with  
machine still in  
operation....





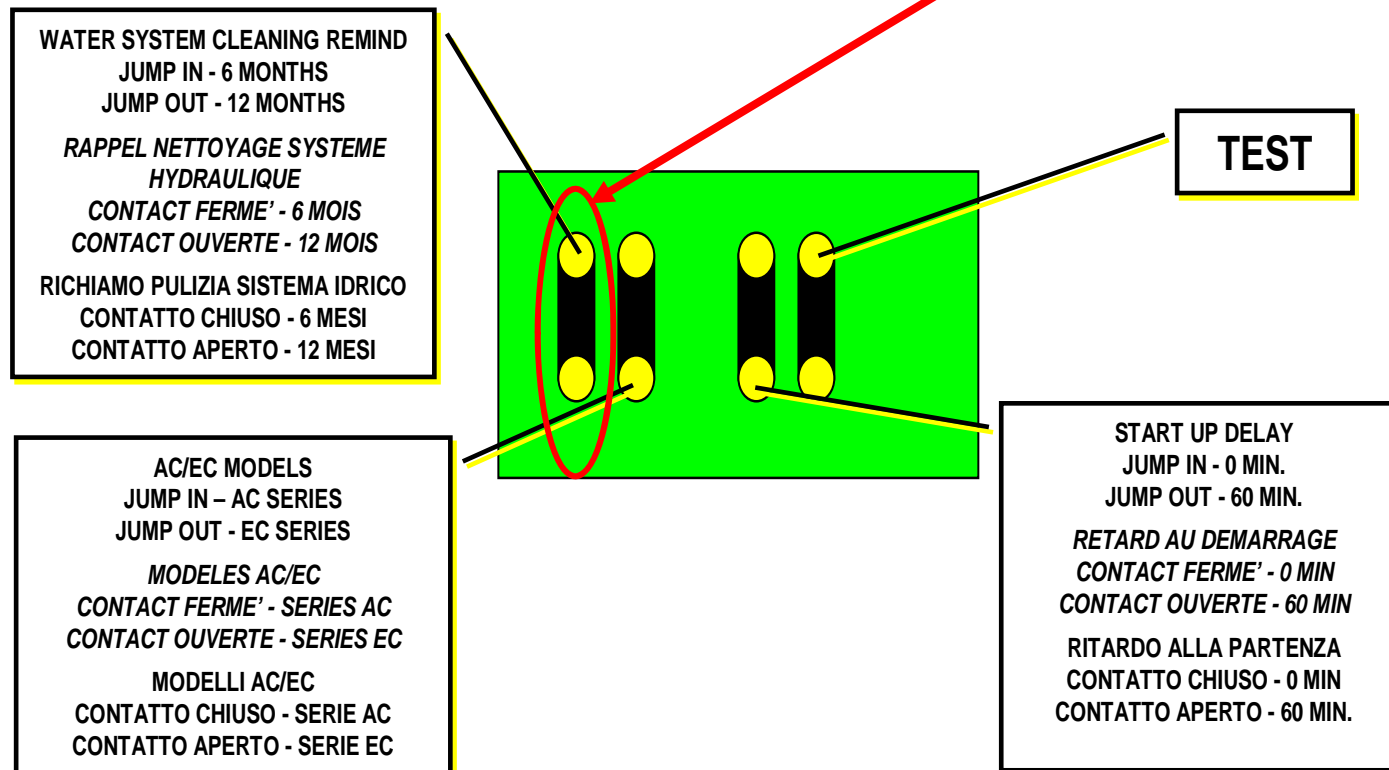
**MAINTENANCE**

.... it's the signal to  
perform the  
cleaning/de-scaling  
of the water  
system.



### MAINTENANCE

The time between cleaning/de-scaling can be changed according with the setting of the FIRST Jumper on the PC Board





## **MAINTENANCE**

The most important program on the maintenance of the cubers is the cleaning/sanitizing to be done on regular base, as detailed here below:

- **Sanitizing:**                   **Every month**
  
- **Cleaning:**                   **Every six**

or when cleaning remind board signals it.

On next slides will be shown the procedure for cleaning and sanitizing.

### MAINTENANCE

#### TOOLS REQUIRED

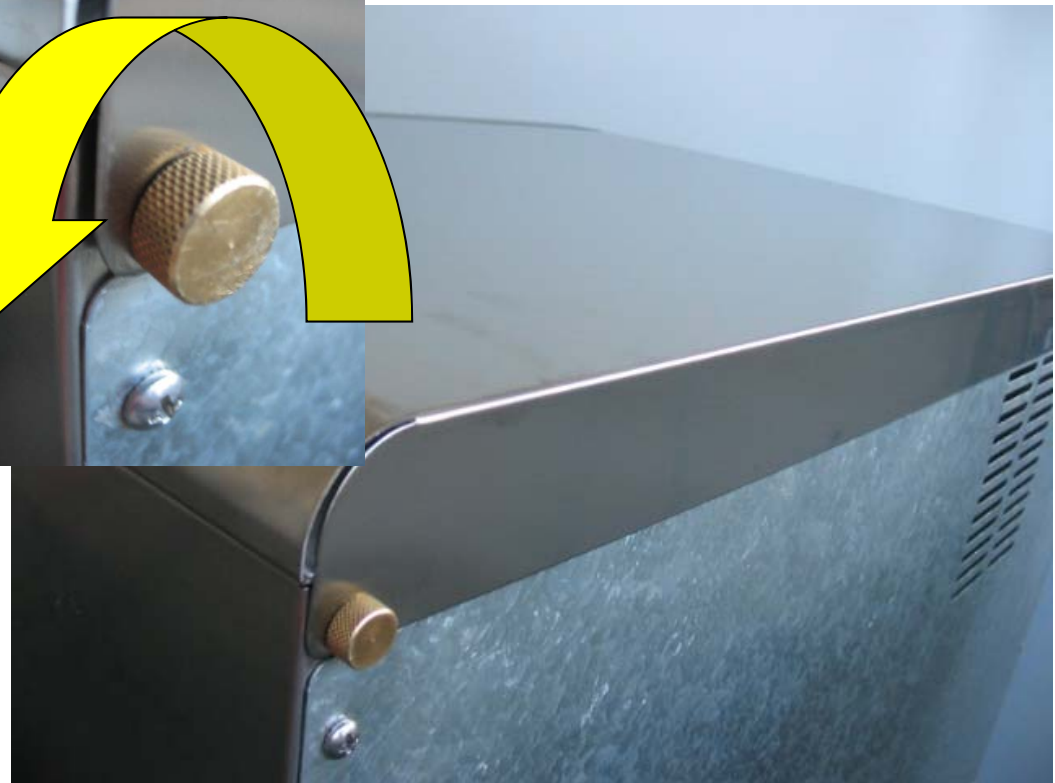
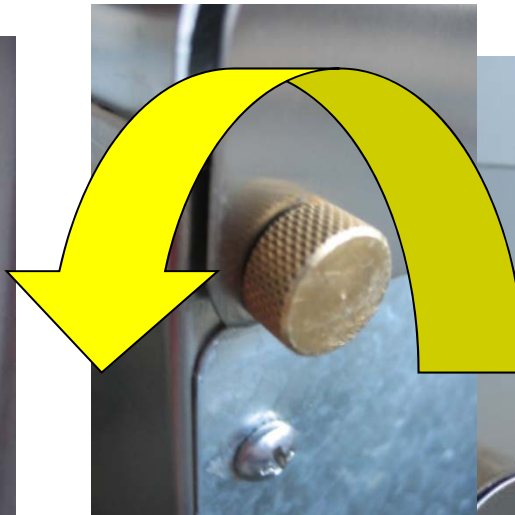
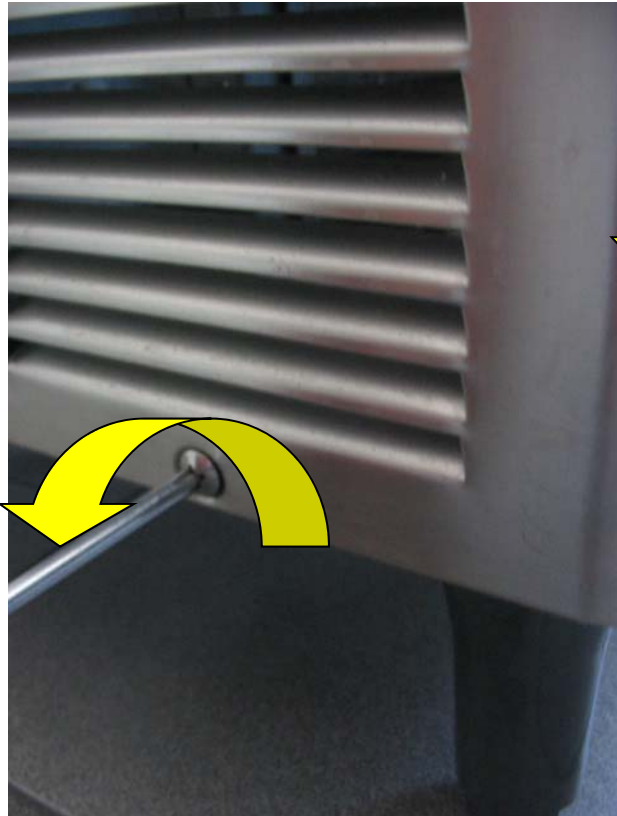
- Medium Phillips Screwdriver
- Medium Flat Screwdriver
- Pair of safety gloves
- Bucket
- Different types of brush
- Approved Cleaner/Sanitizer



**MAINTENANCE**

Remove the front....

....and top panel.



**MAINTENANCE**

Wait till the end of the defrost/harvest cycle then Switch OFF the machine at Push Button Master Switch.





**MAINTENANCE**

Scoop out all ice cubes stored into the bin so to prevent its contamination then...



....take out the S.S. spring holding the soft plastic plug to the bottom of the water sump  
....



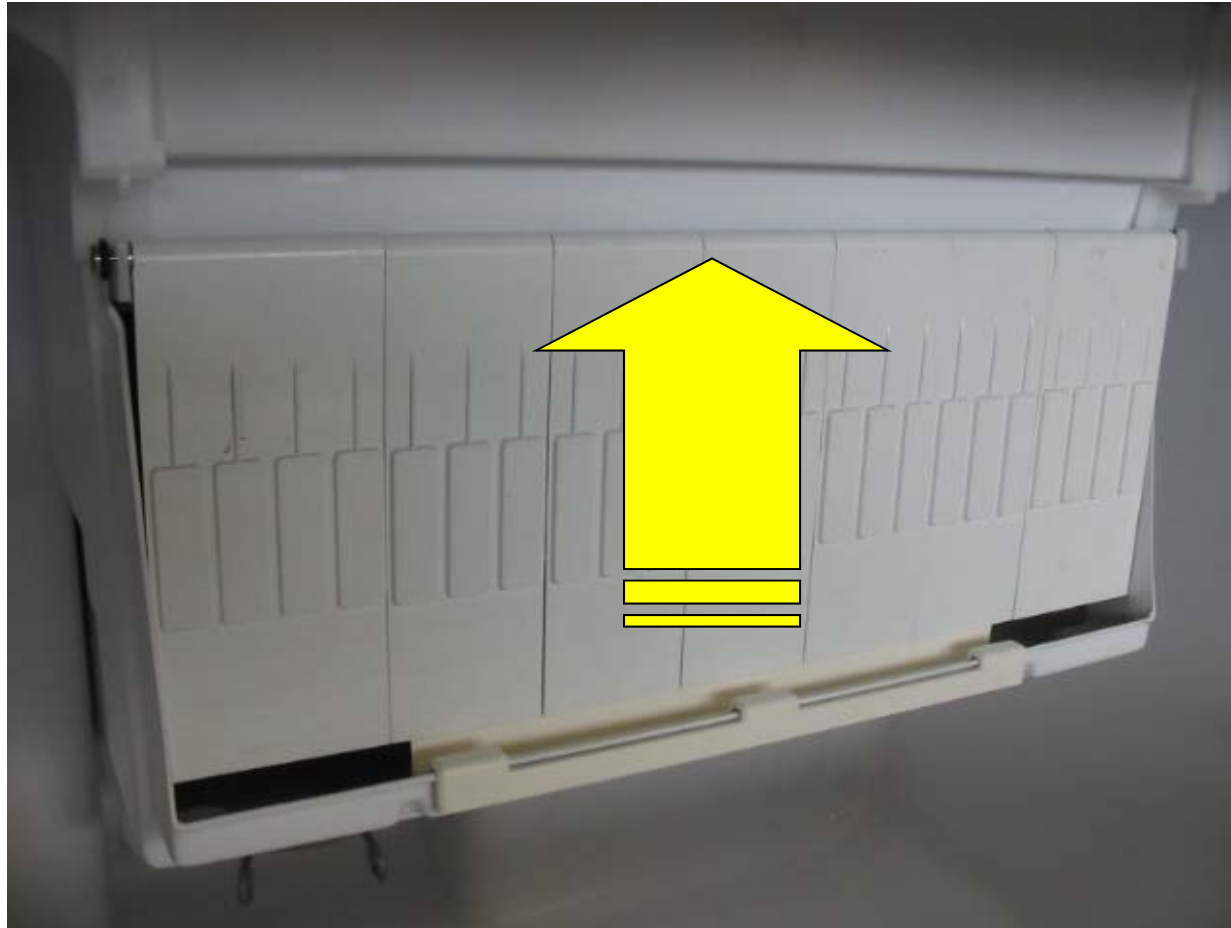
**MAINTENANCE**



....and remove  
the soft plastic  
plug by pulling  
it down so to  
drain out all  
water from the  
water sump.



**MAINTENANCE**



Take out the  
curtain by  
lifting it from  
their sides  
plastic hooks.

**MAINTENANCE**



Grasp the  
spray platen  
assy on the  
center spray  
jet and lift it up  
so to have  
access to the  
water sump.

**MAINTENANCE**



Withdraw the  
plastic hose from  
the spray platen  
seat hose barb  
then .....

**MAINTENANCE**



....turn

counterclockwis

e the spray

platen seat by

1/4 turn and .....

**MAINTENANCE**



... remove it  
from its  
bottom hole

**MAINTENANCE**



Disconnect  
the plastic  
hose from the  
water pump  
outlet port.



## **MAINTENANCE**

Prepare the cleaning solution by diluting in a plastic bucket two liters of lukewarm water (max 40°C) with 200 cc of **SCOTSMAN Ice Machine Cleaner**.



**MAINTENANCE**

Prepare, in a suitable basin, a second cleaning solution by diluting four liters of lukewarm water (max 40°C) with 400 cc of **SCOTSMAN Ice Machine Cleaner**.



## **MAINTENANCE**

Pour into the cleaning solution all parts previously removed from the water system i.e.:

- Spray platen
- Curtain assy
- Spray platen seat
- Soft Plastic plug



**MAINTENANCE**

Leave them into the cleaning solution for about 10 minutes then, with an help of a plastic brush, remove all scale deposit then...



**MAINTENANCE**

....wash them under  
tap water.

When finish, install  
again all removed  
parts following the  
procedure on  
reverse.





**MAINTENANCE**

Remove the evaporator cover then....

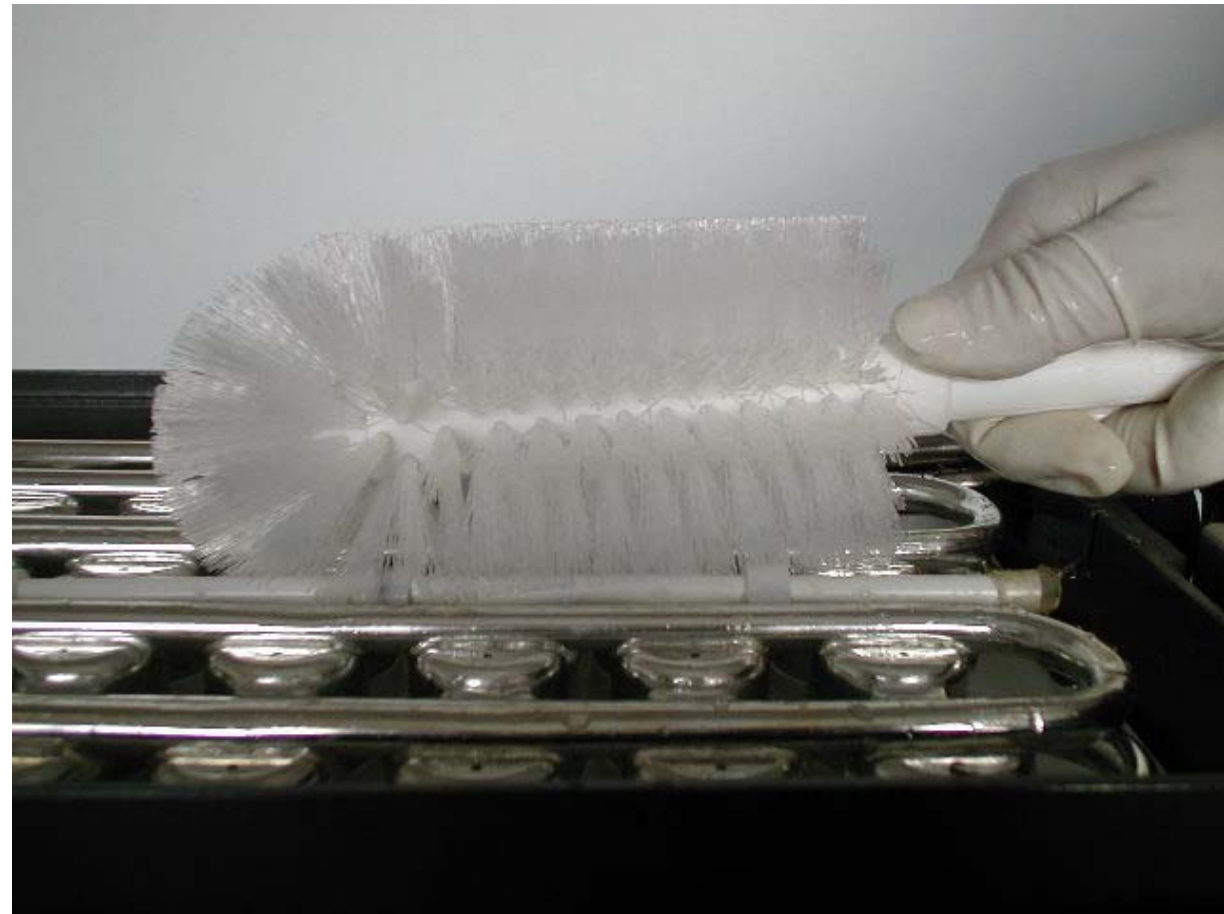
....slowly pour onto the evaporator the cleaning solution.





**MAINTENANCE**

With the help  
of a brush  
dissolve the  
most resistant  
and remote  
scale deposits  
in the plastic  
platen.



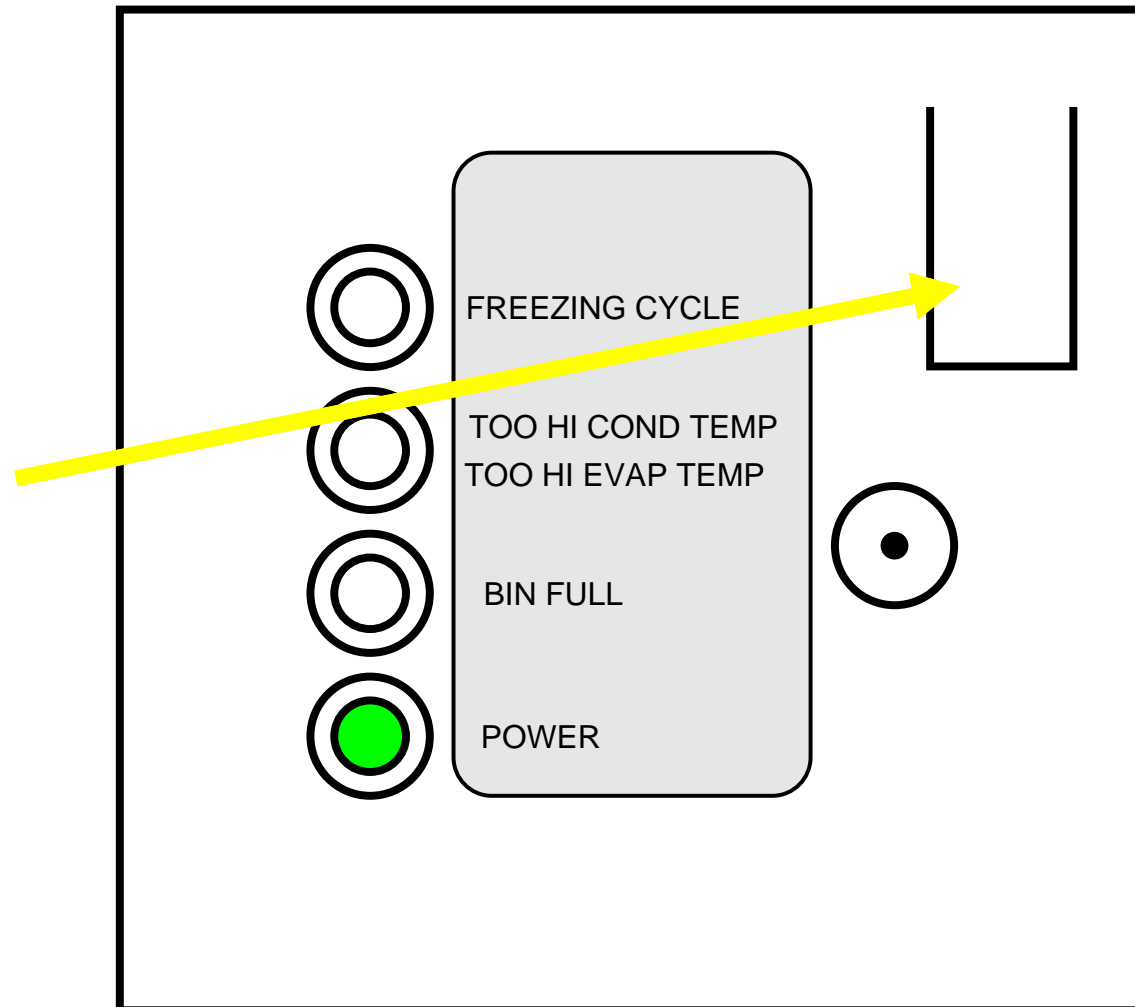
**MAINTENANCE**

Switch ON the  
machine at Push  
Button Master  
Switch.



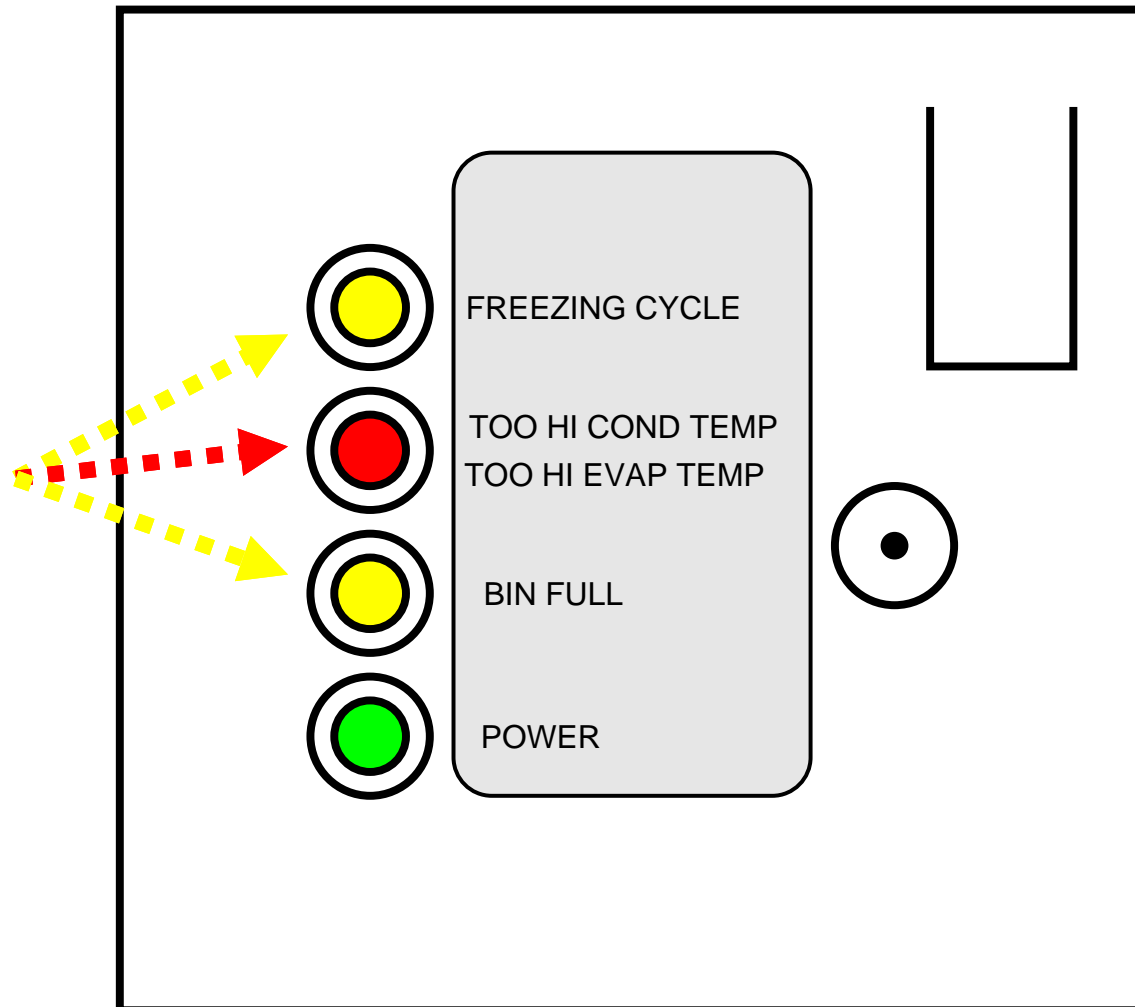
**MAINTENANCE**

During the Water  
Filling Phase push  
the Re-Set button  
between 2 and 5”.



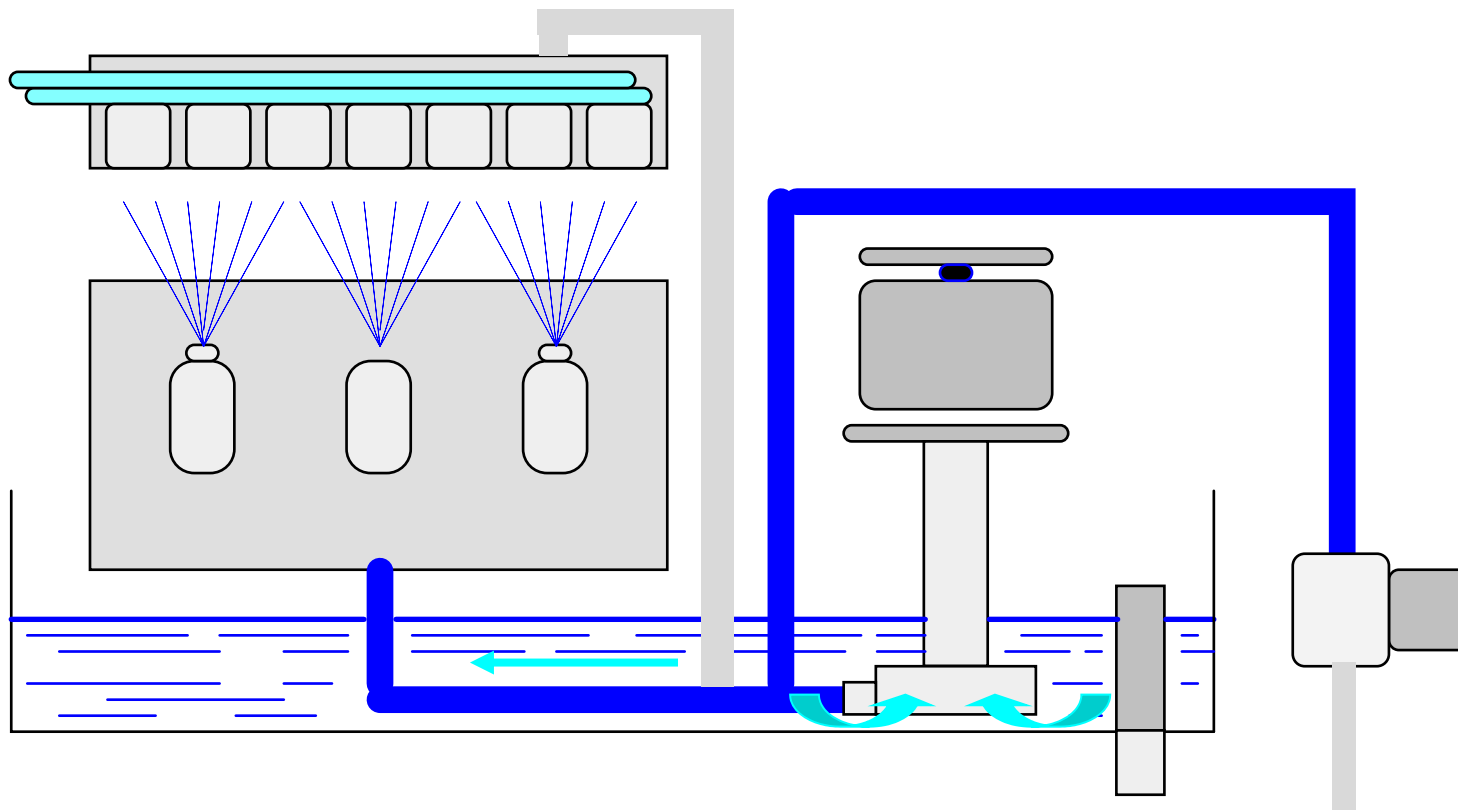
**MAINTENANCE**

The machine  
enter in Cleaning  
Mode with the first  
three LED  
blinking.



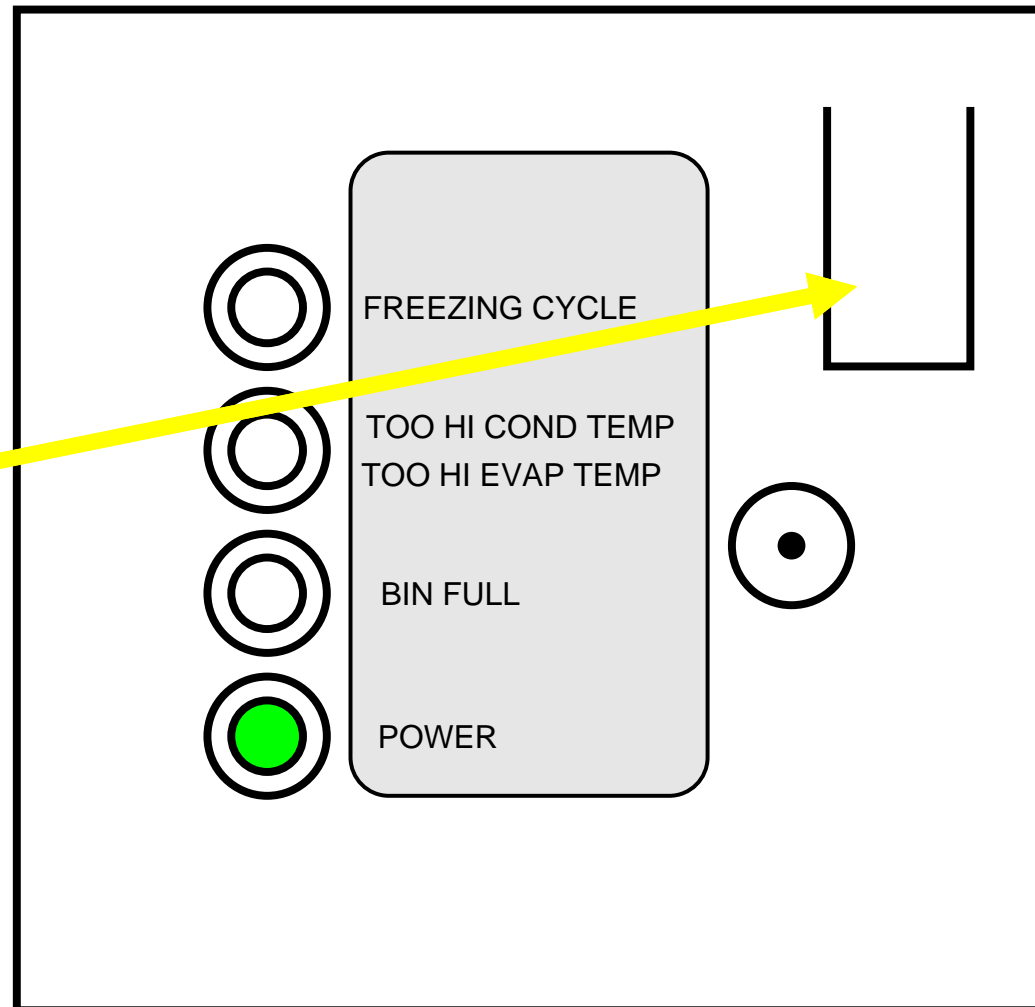
**MAINTENANCE**

With the water pump in operation the cleaning solution is kept in circulation through the entire water system.



**MAINTENANCE**

Let the unit remain in the cleaning mode for about 20 minutes then push again the Re-Set button between 2 and 5", to move back the machine in the Water Filling Phase.





**MAINTENANCE**

Switch OFF  
the machine  
at Push  
Button Switch.



**MAINTENANCE**

Flush out the cleaning solution from the sump by removing the soft plastic plug then....



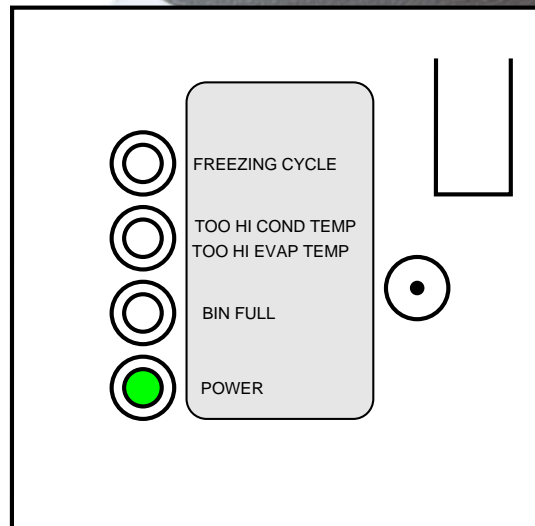
... pour onto the evaporator cavity three liters of fresh water to rinse the molds and the platen.



**MAINTENANCE**

Switch ON again the machine and push the PC Board Push Button between 2 & 5”.

The water pump is again in operation to circulate the water so to rinse the water system



Do it twice so to be sure no more trace of descaling/ cleaning solution remains into the sump.

## **MAINTENANCE**

Pour on the upper side of the evaporator 2 liters of fresh water with 10-15 drops of **Scotsman Antialgae Solution** then....

.... turn again the machine in cleaning mode for 10 minutes so to sanitize all the water system.

**NOTE. Do not mix delimer with sanitizing solution to avoid the generation of a very aggressive acid.**

**MAINTENANCE**

Switch OFF the machine by the Green main Switch



Flush out the sanitizing solution from the sump then....



Switch ON again the machine by the Green main Switch





## **MAINTENANCE**

Place again the evaporator cover and the service panels previously removed.

At completion of the freezing and harvest cycle make sure of proper texture and clearness of the ice cubes and that they do not have any acid taste.

**ATTENTION.** In case the ice cubes are cloudy-white and have acid taste, melt them immediately by pouring on them some warm water so to prevent that anybody can use them.





NEW AC SERIES

## MAINTENANCE

Wipe clean and rinse the inner surface of the storage bin.

**REMEMBER.** To prevent the accumulation of undesirable bacteria it is necessary to sanitize the interior of the storage bin with a sanitizing solution every week.



**NEW AC SERIES**

# **SERVICE ANALYSIS**

### SERVICE ANALYSIS

All the machines of the AC Series are now supplied with a label showing the different meanings of the Push Buttons so to help the Service Technician in the right diagnosis of the possible malfunction of the machine.

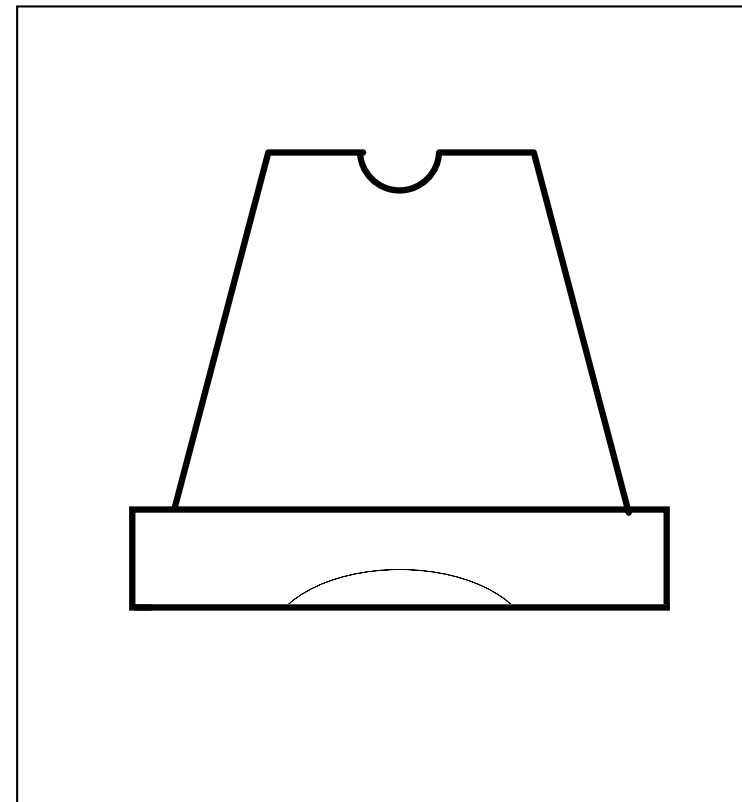
The label is stick on the back side of the front panel



**SERVICE ANALYSIS**

This is a  
**Scotsman Ice  
Cube.**

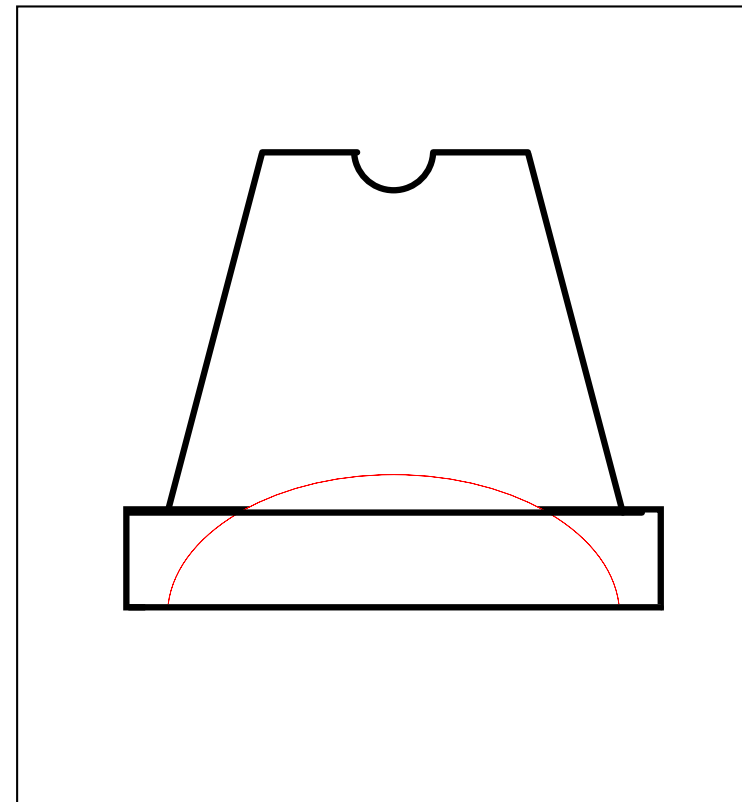
It must be clear,  
solid with a small  
depression on its  
bottom rim of about  
3-4 mm.



## **SERVICE ANALYSIS**

This ice cube is clear, solid but it has a deep depression on its bottom rim due to a too short freezing cycle.

It is necessary to extend the length of the freezing cycle by changing the setting of DIP SWITCH 1, 2, 3 and 4. ....



### SERVICE ANALYSIS

Check first the combination of the DIP SWITCH 1, 2, 3 and 4.



Check on the chart the relating length of the freezing cycle controlled by the PC Board Timer.

1	2	3	4	Ta min.
OFF	OFF	ON	ON	7
ON	ON	OFF	ON	9
OFF	ON	OFF	ON	11
ON	OFF	OFF	ON	13



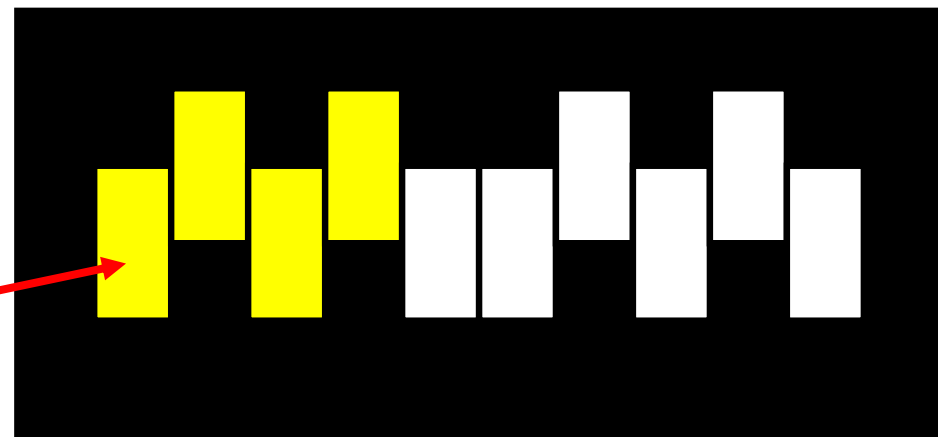
### SERVICE ANALYSIS

For a longer freezing cycle change the combination of the DIP SWITCH from 9 to 11 minutes.

1	2	3	4	Ta min.
OFF	OFF	ON	ON	7
ON	ON	OFF	ON	9
OFF	ON	OFF	ON	11
ON	OFF	OFF	ON	13

New combination for 11 minutes Time Ta is:

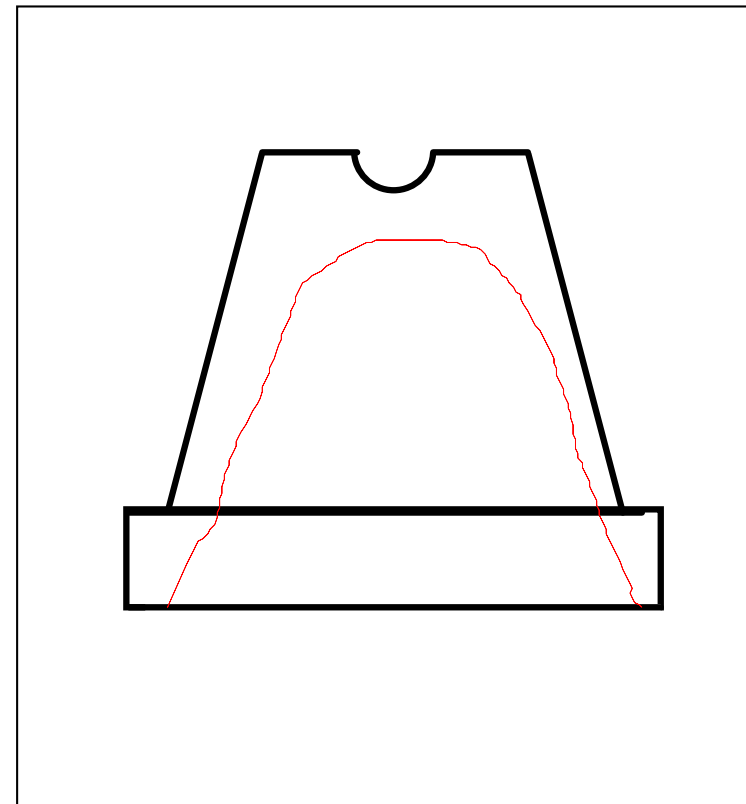
**OFF-ON-OFF-ON**



## **SERVICE ANALYSIS**

This ice cube is clear, solid but it is very thin with a very big depression on its bottom rim due to a very short freezing cycle.

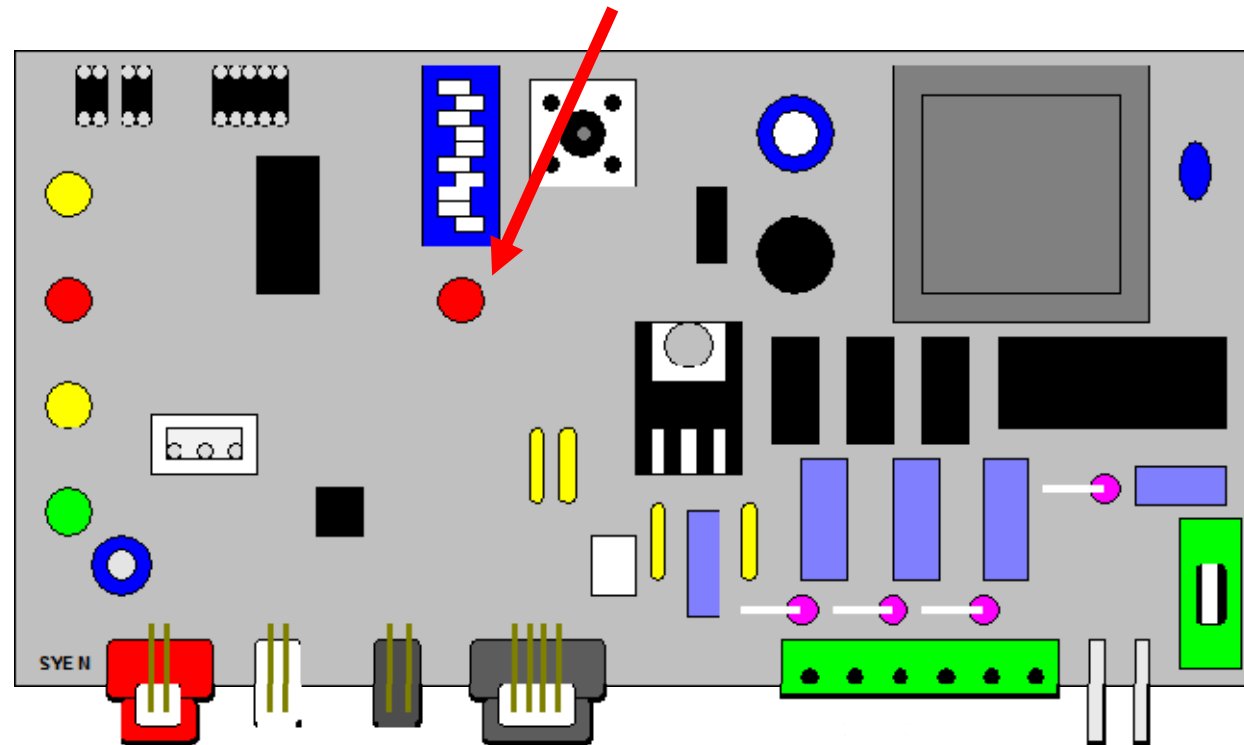
In this situation may be the PC Board by-passed the first two portions of the freezing cycle - Time  $T_1 + T_2$  - due to a inoperative evaporator sensor.



## SERVICE ANALYSIS

Looking the PC Board the Red LEDs -15°C is probably lighted ON immediately at start up of freezing cycle.

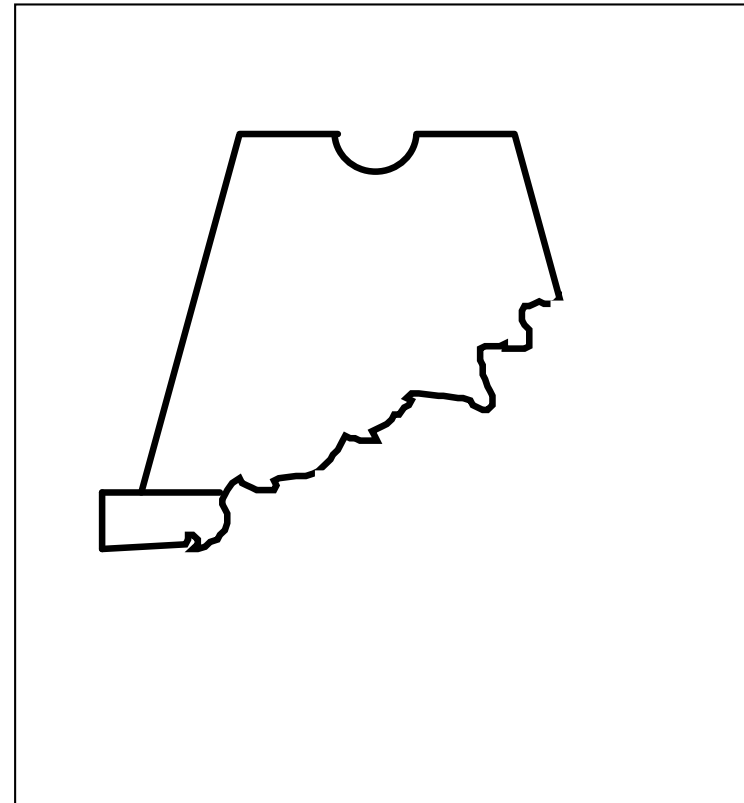
The solution is to replace the evaporator sensor with a new one.



## **SERVICE ANALYSIS**

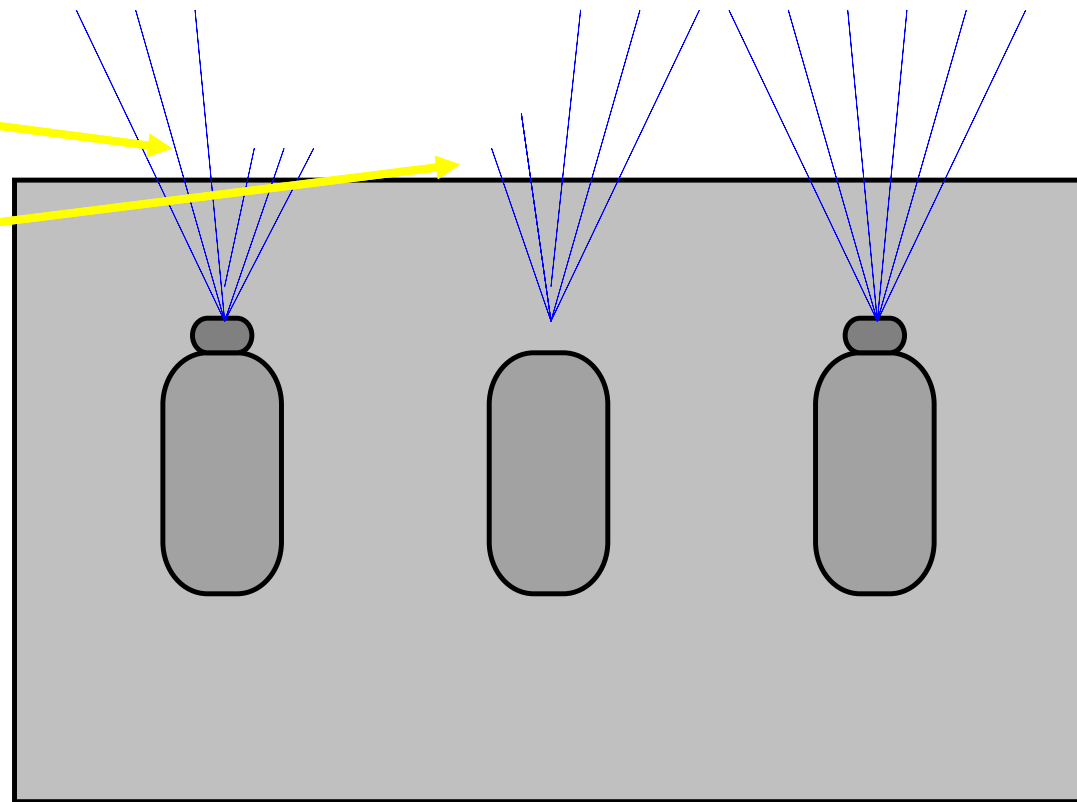
This is a typical ice cube clear on its upper left side and white and corroded on its bottom right side.

The reason is that the water doesn't reach in correctly the inside of some of the tin cooper molds.



**SERVICE ANALYSIS**

Probably one or more of the spray jets of the spray platen is partially blocked by scale/dirt and the water is no longer sprayed as a complete inverted water cone.



**SERVICE ANALYSIS**

To overcome the problem it is necessary first to find out which of the six spray jets doesn't spray water in the correct way then remove the complete spray platen from the sump and .....





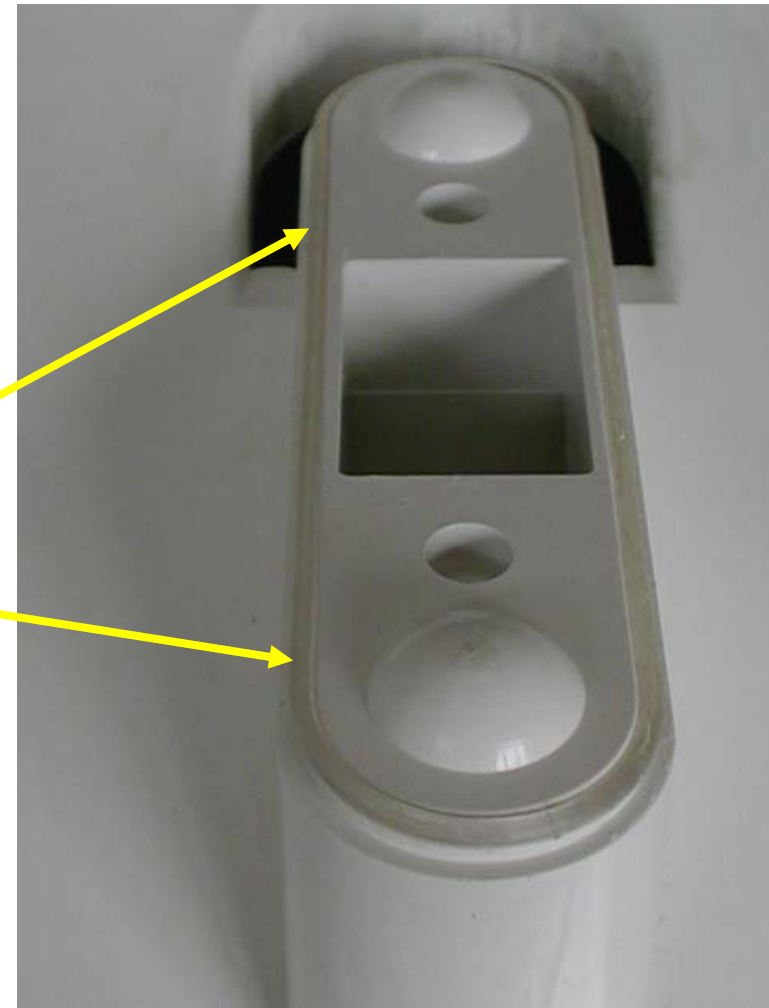
**SERVICE ANALYSIS**

....unloose  
the two  
screws &  
nuts securing  
the plastic  
spray cover  
to the spray  
platen and  
clean or  
replace it with  
a new one.



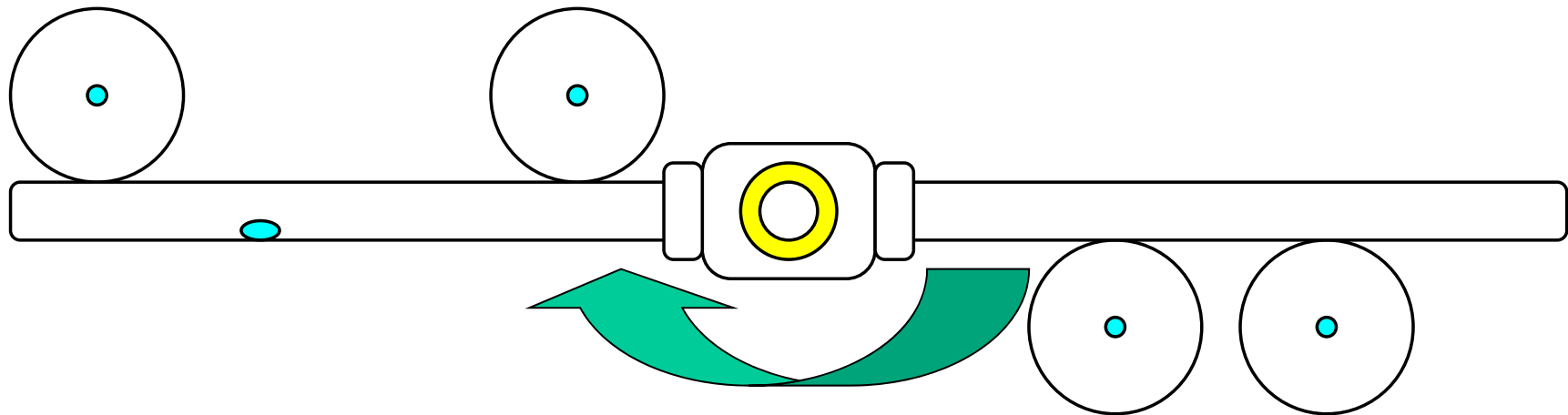
**SERVICE ANALYSIS**

When refit it on the spray platen be careful in correctly install the O ring between the spray cover and its bottom seat.



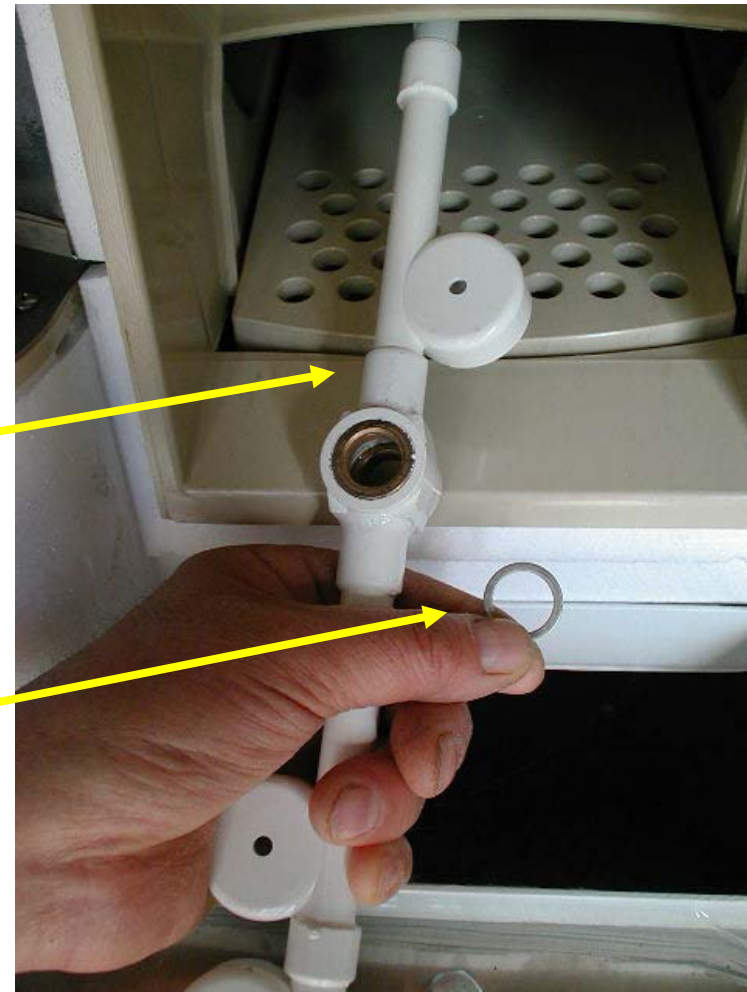
## **SERVICE ANALYSIS**

Probably one or more of the spray jets of the spray bar are partially blocked by scale/dirt and/or the spray bar is not rotating at proper speed.



**SERVICE ANALYSIS**

To overcome the problem  
it is necessary first to  
remove from the inside of  
the evaporator  
chamber/sump the spray  
bar and its S.S. trust  
washer....



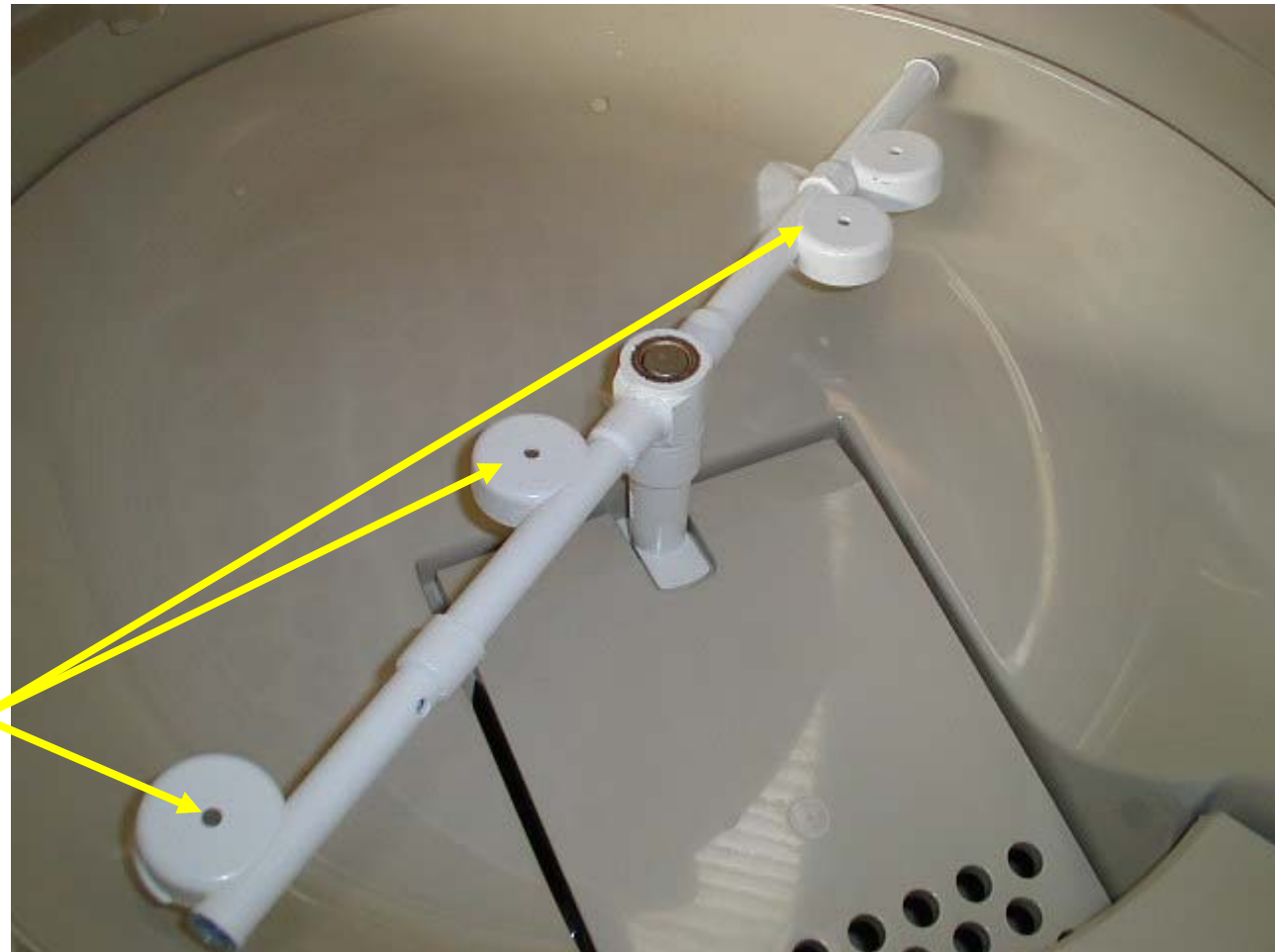
**SERVICE ANALYSIS**

....then dump  
into a  
cleaning/de-  
scaling  
solution to  
remove any  
possible scale  
formation from  
the inside...



**SERVICE ANALYSIS**

Re-fit first the  
trust washer  
and the spray  
bar paying  
attention that  
the jet holes  
face up.

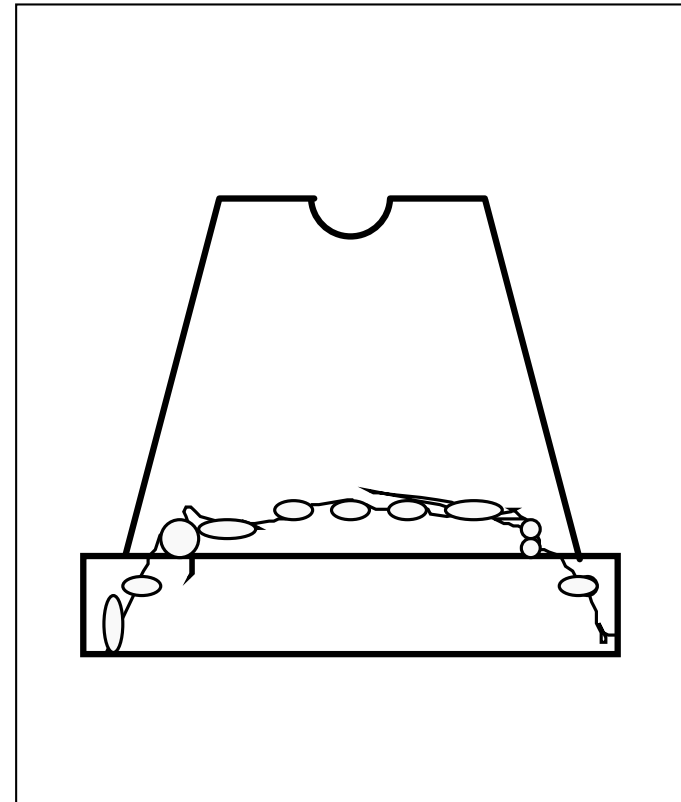




## **SERVICE ANALYSIS**

This is a typical ice cube; clear on its upper side and white and corroded on its bottom side.

The water is sprayed in the correct way and under the right pressure only during the first portion of the freezing cycle while on the second half the level of the water in the sump is not enough to assure the proper spray of the water pump (cavitation).



**Scotsman**<sup>®</sup>  
Ice Systems

**NEW AC SERIES**

**SERVICE ANALYSIS**



## **SERVICE ANALYSIS**

The reason is the too low water level into the sump during the harvest cycle that could be related to:

- **Too low water inlet pressure**

**SERVICE ANALYSIS**

- **Clogged water filter**



**SERVICE ANALYSIS**

- **Clogged water inlet strainer**





**SERVICE ANALYSIS**

- **Clogged  
water flow  
control**





**SERVICE ANALYSIS**

- **Water leak through the front curtain**



**SERVICE ANALYSIS**

- Water leak through the soft plastic plug



**SERVICE ANALYSIS**

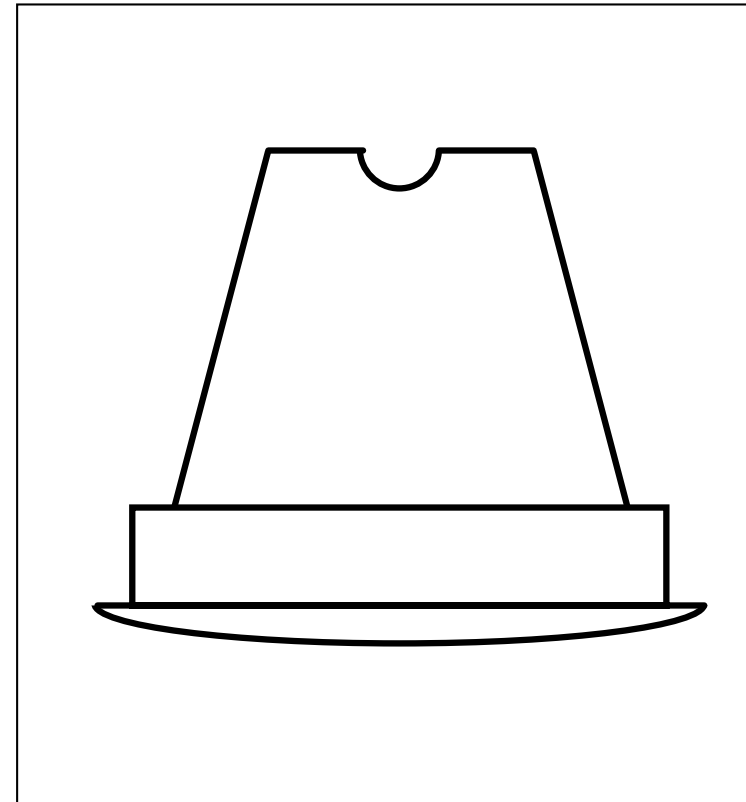
- Water leak through the water drain valve



## **SERVICE ANALYSIS**

This ice cube is clear, solid but it is oversized.

It is necessary to reduce the length of the freezing cycle by changing the setting of DIP SWITCH 1, 2, 3 and 4.



### SERVICE ANALYSIS

Check first the combination of the DIP SWITCH 1, 2, 3 and 4.

Check on the chart the relating length of the freezing cycle controlled by the PC Board Timer.



1	2	3	4	Ta min.
OFF	OFF	ON	ON	7
ON	ON	OFF	ON	9
OFF	ON	OFF	ON	11
ON	OFF	OFF	ON	13

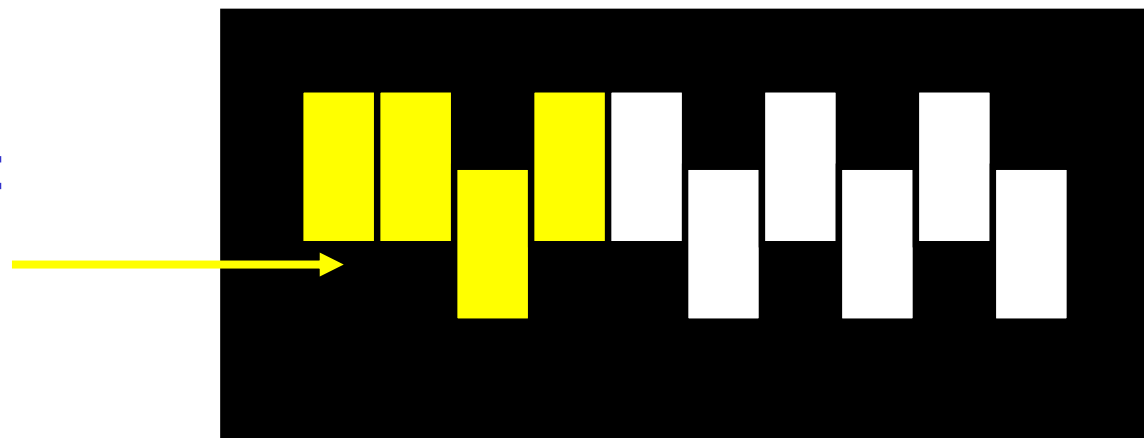
### SERVICE ANALYSIS

For a shorter freezing cycle change the combination of the DIP SWITCH from 13 to 9 minutes.

1	2	3	4	Ta min.
OFF	OFF	ON	ON	7
ON	ON	OFF	ON	9
OFF	ON	OFF	ON	11
ON	OFF	OFF	ON	13

New combination for 9 minutes Time Ta is:

**ON-ON-OFF-ON**

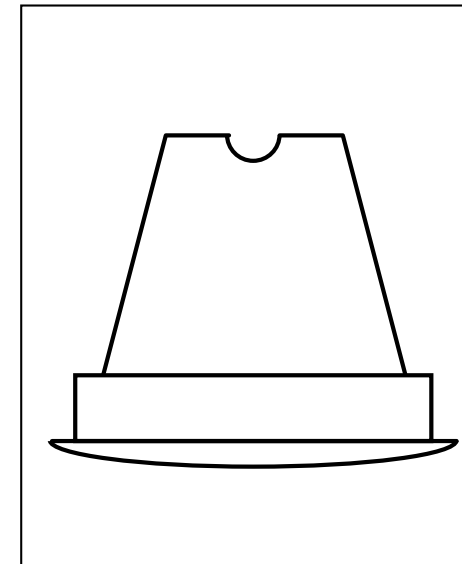
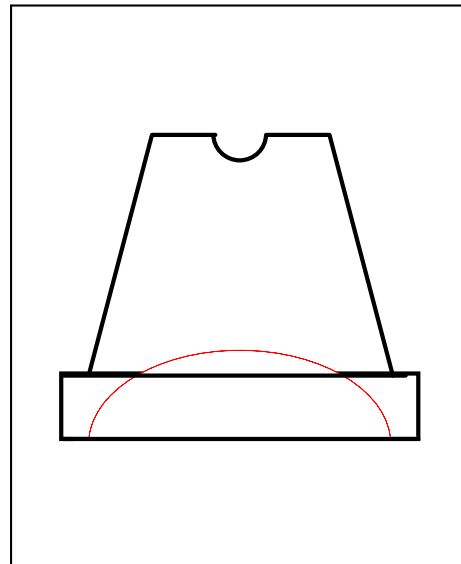




**SERVICE ANALYSIS**

These ice cubes are both clear, solid but some are oversized and some other are undersized.

If so the possible reason is an incorrect charge of refrigerant in the system (too low).



**SERVICE ANALYSIS**

Looking the upper side of the evaporator after 15-20 minutes in the freeze the serpentine is properly frosted mainly on the first portion of the same (inlet of refrigerant) while on the second portion (outlet) the frost is very thin (no exchange of heat between refrigerant - already in vapor state - and sprayed water).

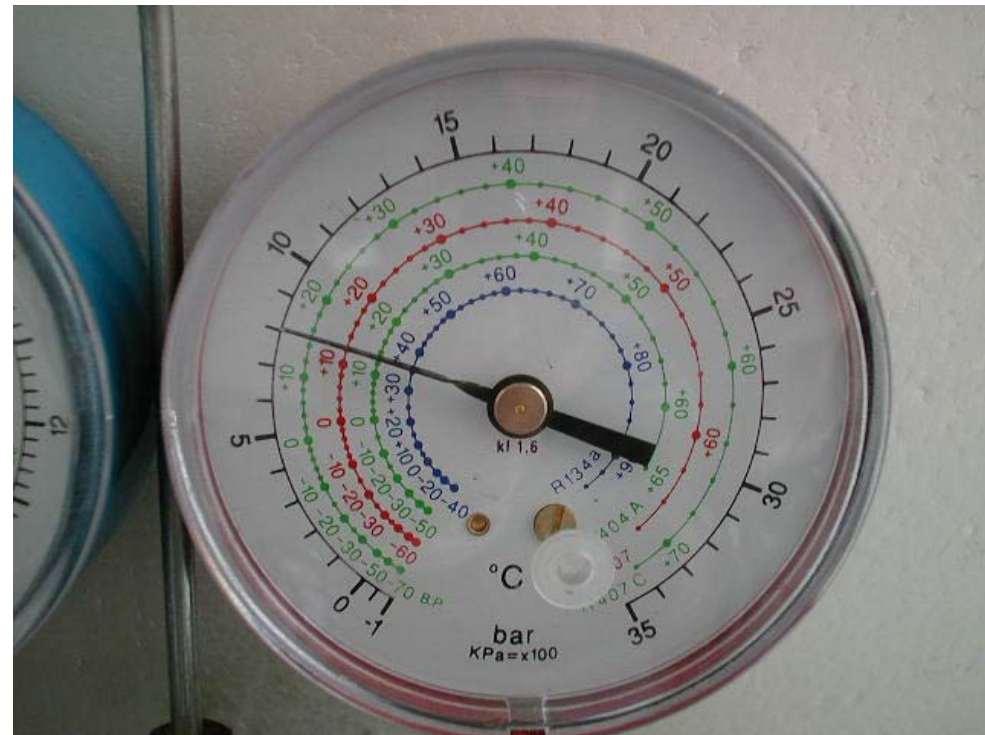


## **SERVICE ANALYSIS**

Check the operating pressures of the refrigerant system connecting the gauges on hi and low service valve.

The operating pressures at the end of the freezing cycle with unit at 21°C ambient must be:

**Hi pressure (air): 8÷9 bar  
(110 PSI)**



### SERVICE ANALYSIS

Check the operating pressures of the refrigerant system connecting the gauges on hi and low service valve.

The operating pressures at the end of the freezing cycle with unit at 21°C ambient must be:

Hi pressure (air): 8 ÷ 9 (110 PSI)

Hi pressure (water): **8,5 bar**  
**(100 PSI)**





## **SERVICE ANALYSIS**

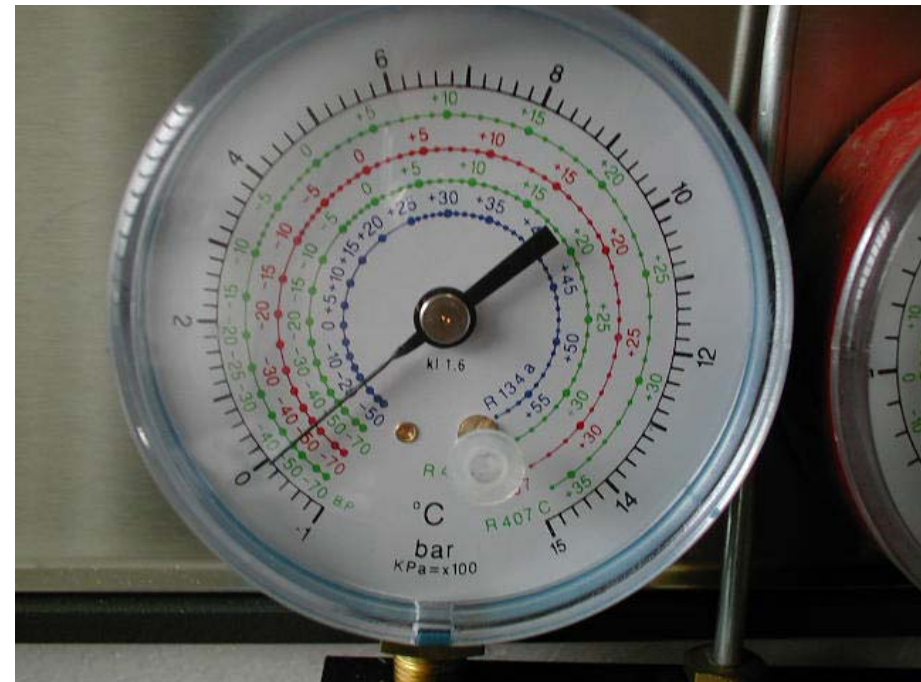
Check the operating pressures of the refrigerant system connecting the gauges on hi and low service valve.

The operating pressures at the end of the freezing cycle with unit at 21°C ambient must be:

Hi pressure (air): 8 ÷ 9 (110 PSI)

Hi pressure (water): 8,5 bar (100 PSI)

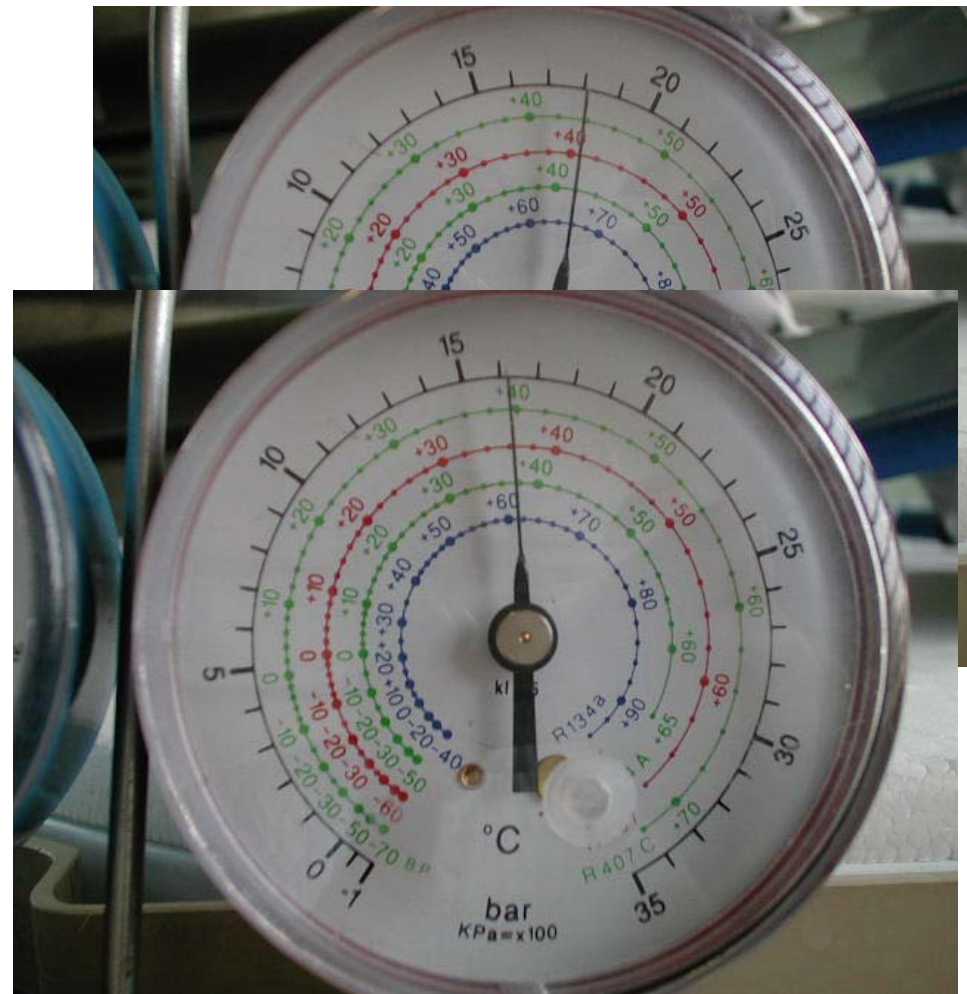
**Low pressure: 0-0,1 bar (0-2 PSI)**



### SERVICE ANALYSIS

On R404a models (AC 206 and AC 226) the operating pressures at the end of the freezing cycle with unit at 21°C ambient are:

**Hi pressure (air): 18 ÷ 16 bar (250 ÷ 225 PSI)**



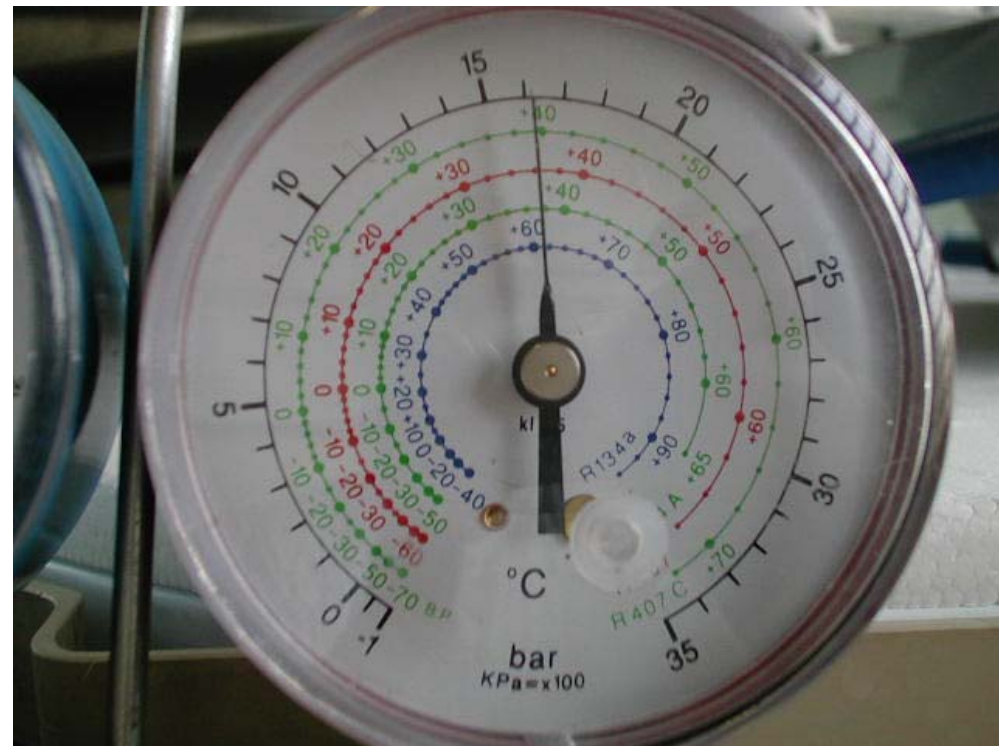


**SERVICE ANALYSIS**

On R404a models (AC 206 and AC 226) the operating pressures at the end of the freezing cycle with unit at 21°C ambient are:

Hi pressure (air): 18÷16 bar (250÷225 PSI)

Hi pressure (water): 16 bar (225 PSI)



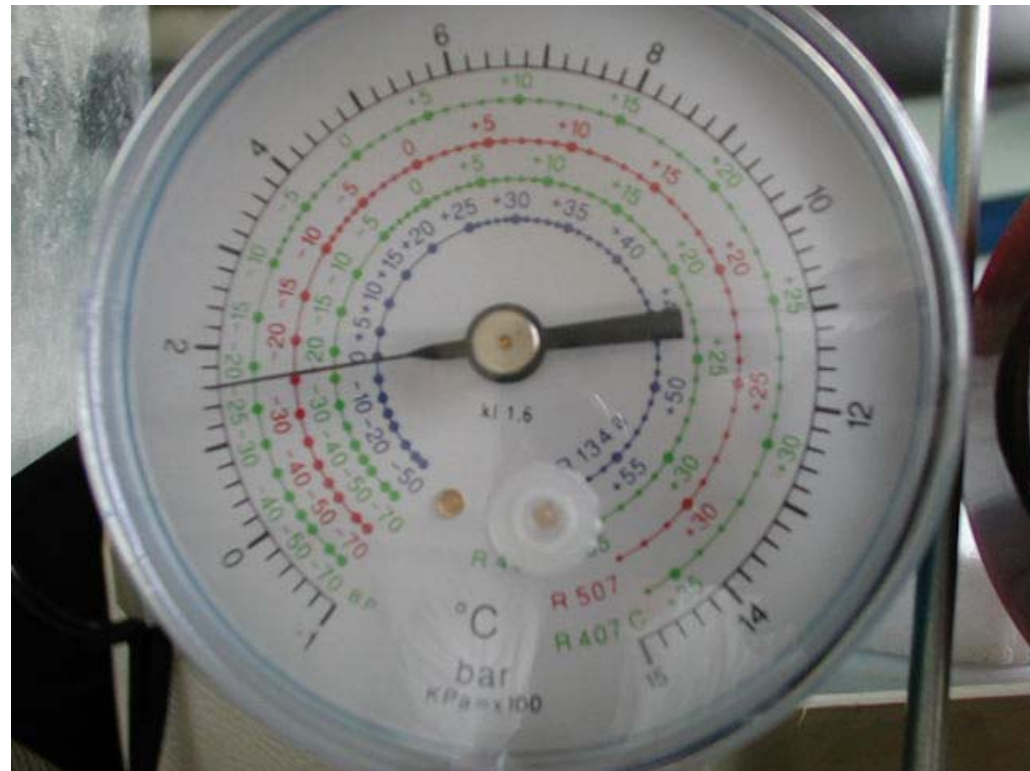
### SERVICE ANALYSIS

On R404a models (AC 206 and AC 226) the operating pressures at the end of the freezing cycle with unit at 21°C ambient are:

Hi pressure (air): 18÷16 bar (250÷225 PSI)

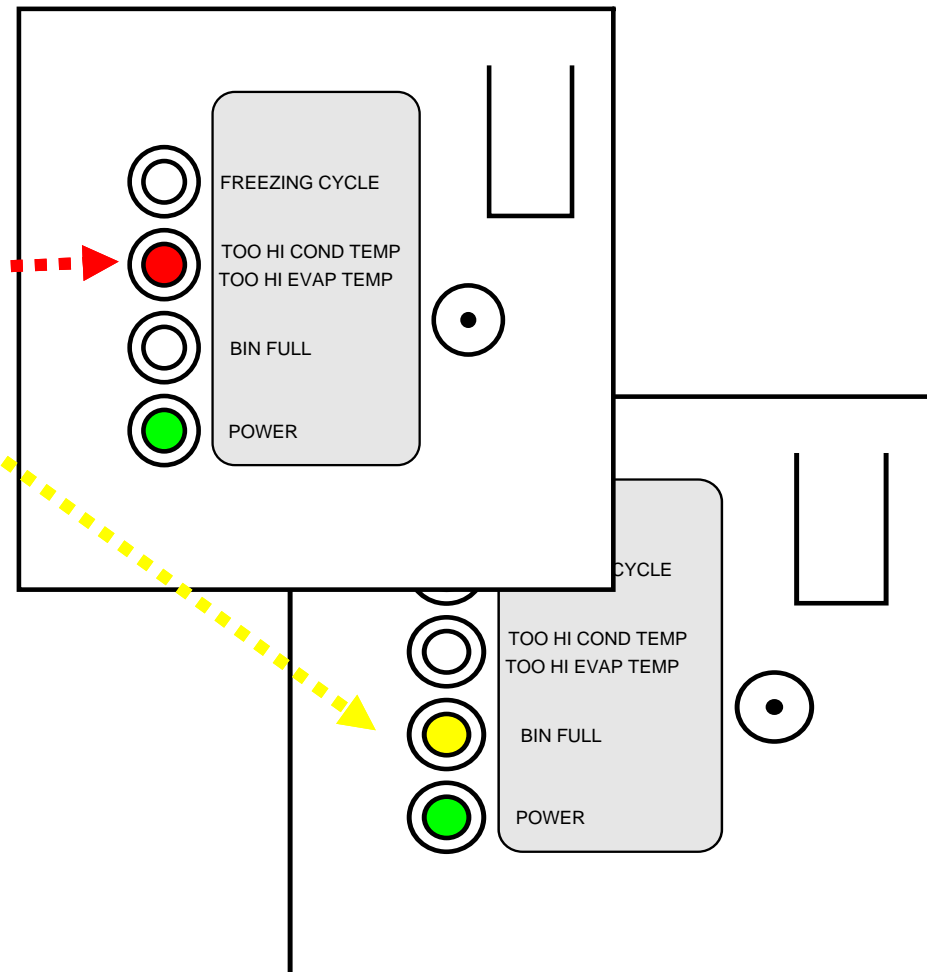
Hi pressure (water): 16 bar (225 PSI)

Low pressure: 1.5 bar (21 PSI)



**SERVICE ANALYSIS**  
**ICE LEVEL SENSOR OUT OF ORDER**

Whenever yellow and red  
LED blink alternately ice  
level control is out of order  
and must be replaced





## NEW AC SERIES

### **SERVICE ANALYSIS** ICE LEVEL SENSOR OUT OF ORDER

This new Electronic PC Board is no longer equipped with the trimmer used to adjust the I/R beam. The PC Board can now perform the I/R calibration/adjustment through the following procedure:

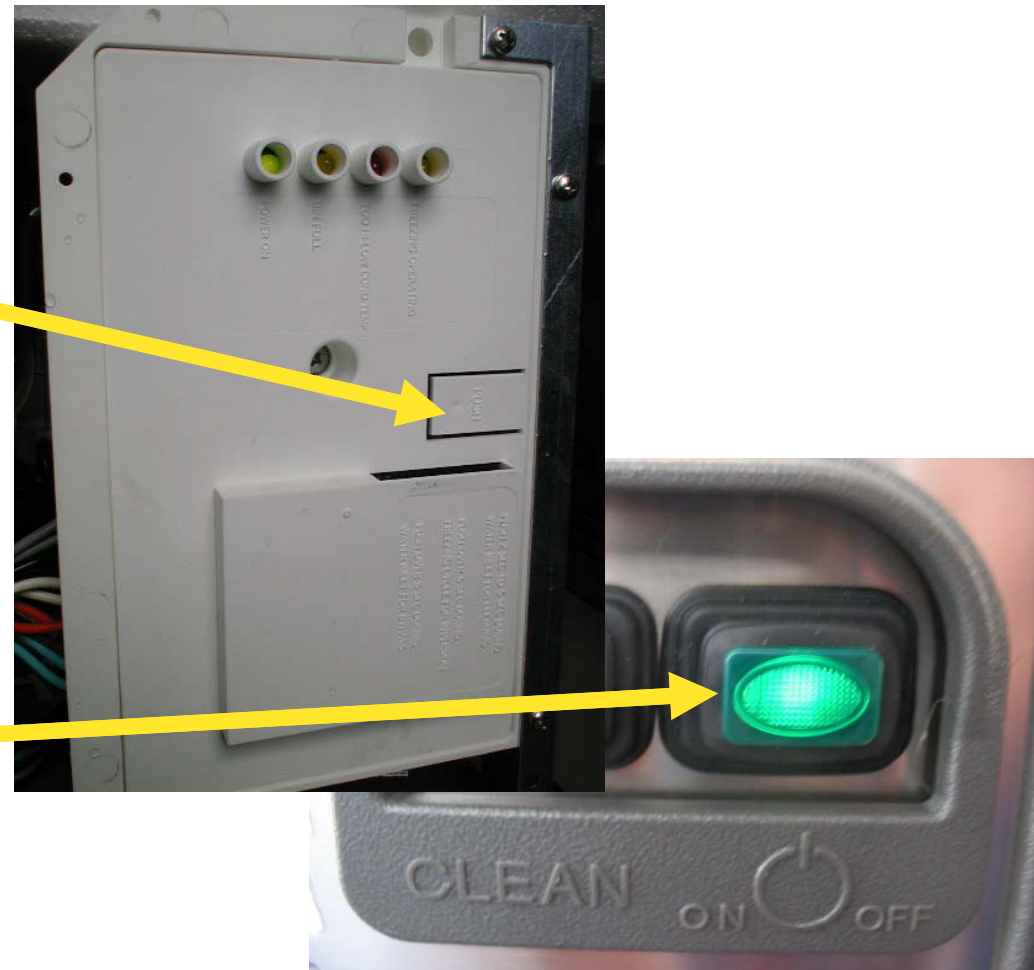
**SERVICE ANALYSIS**  
ICE LEVEL SENSOR OUT OF ORDER

- Be assured that either ice level sensor lenses tx & rx are cleaned without any scale
- Turn the unit OFF by Green switch.



**SERVICE ANALYSIS**  
ICE LEVEL SENSOR OUT OF ORDER

- Push and keep on pushing reset button.
- While keeping reset button pushing turn the unit ON by green switch

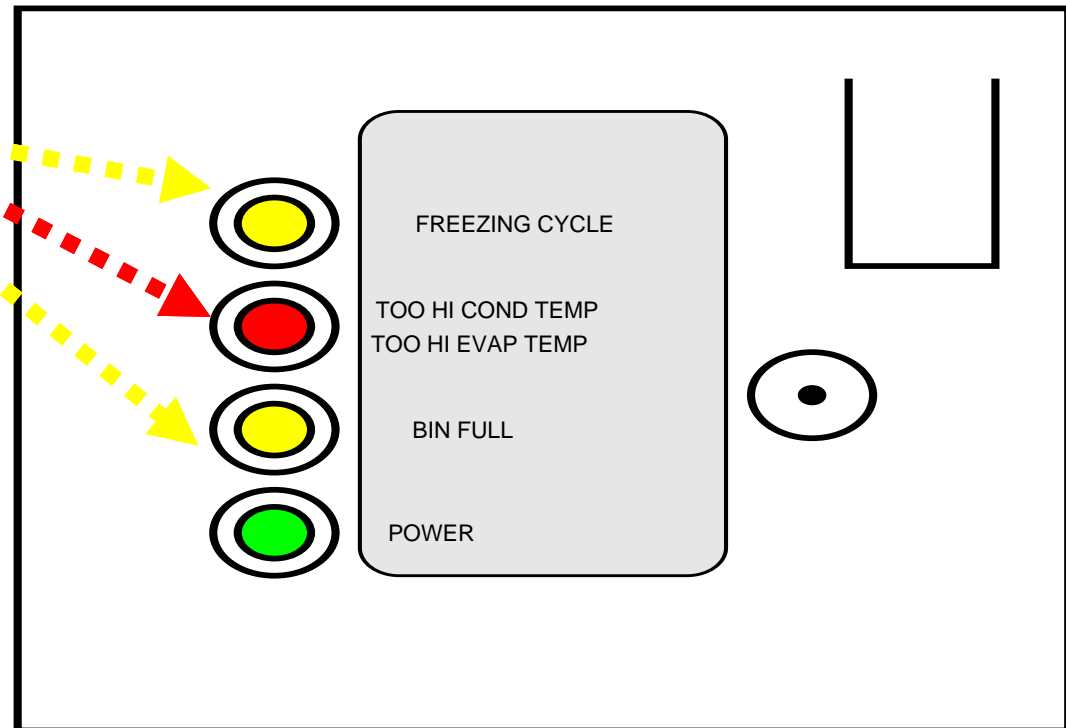




## **SERVICE ANALYSIS**

### **ICE LEVEL SENSOR OUT OF ORDER**

- Wait few second then all these LEDs will flash at once
- Release reset button, calibration is done





## NEW AC SERIES

### SERVICE ANALYSIS

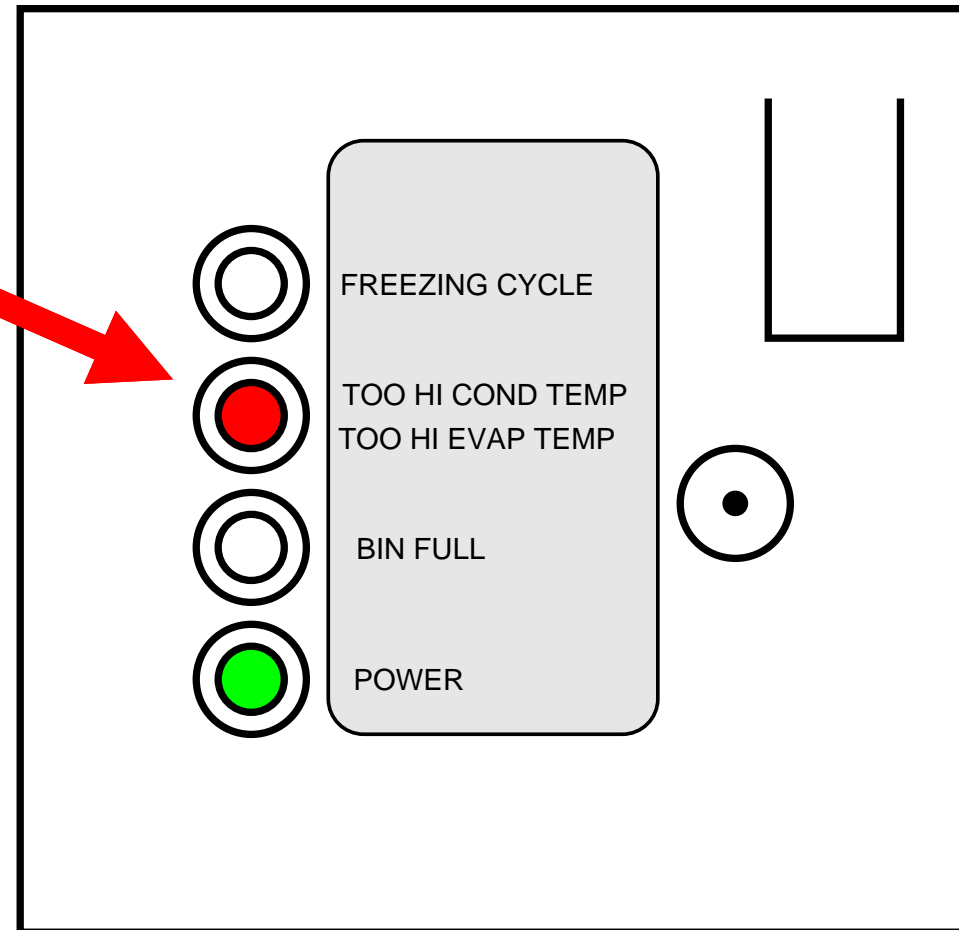
#### ICE LEVEL SENSOR OUT OF ORDER

This calibration should take place whenever needed or required anyhow **MUST** be followed anytime pcb and / or ice level sensor is replaced

**SERVICE ANALYSIS**

The unit is OFF with  
the Red LED of PC  
Board **ON steady**

The reason is a  
**too high  
condensing  
temperature  
(>70°C on air  
cooled version or  
>60°C on water  
cooled version)**  
caused by.....



**SERVICE ANALYSIS**

- Fan Motor (air cooled version) inoperative



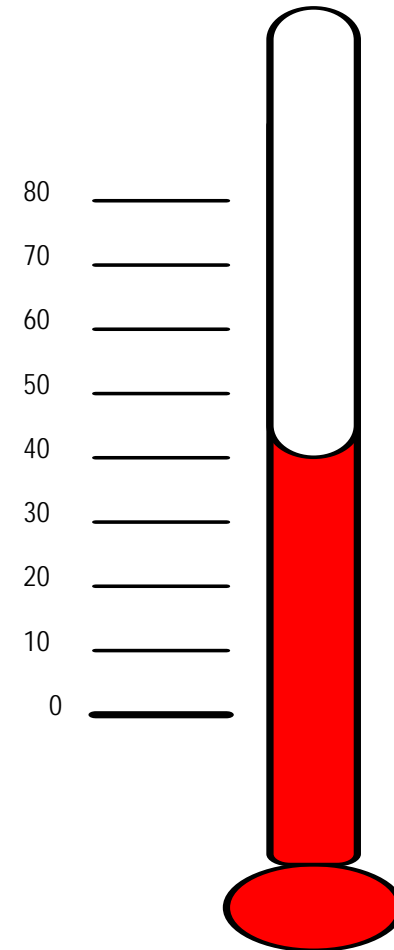
**SERVICE ANALYSIS**

- Dirty condenser



**SERVICE ANALYSIS**

- Too high room temperature





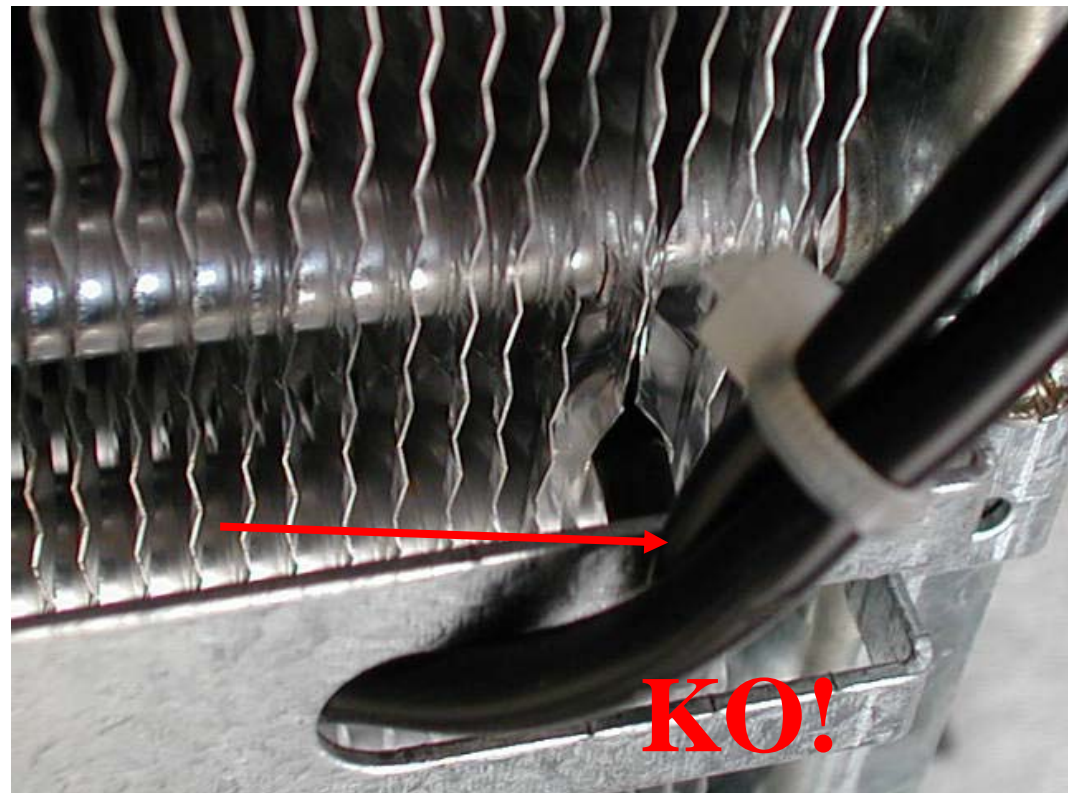
**SERVICE ANALYSIS**

- No water to water cooled condenser



**SERVICE ANALYSIS**

- Condenser sensor inoperative



## **SERVICE ANALYSIS**

**Fan motor (air cooled version) inoperative**

Check during freezing cycle  
for:

- **Power to the fan motor  
(contacts 2 and 4)**



**SERVICE ANALYSIS**

**Fan motor (air cooled version) inoperative**

Check during freezing cycle for:

- **Electrical conductivity of the fan motor**



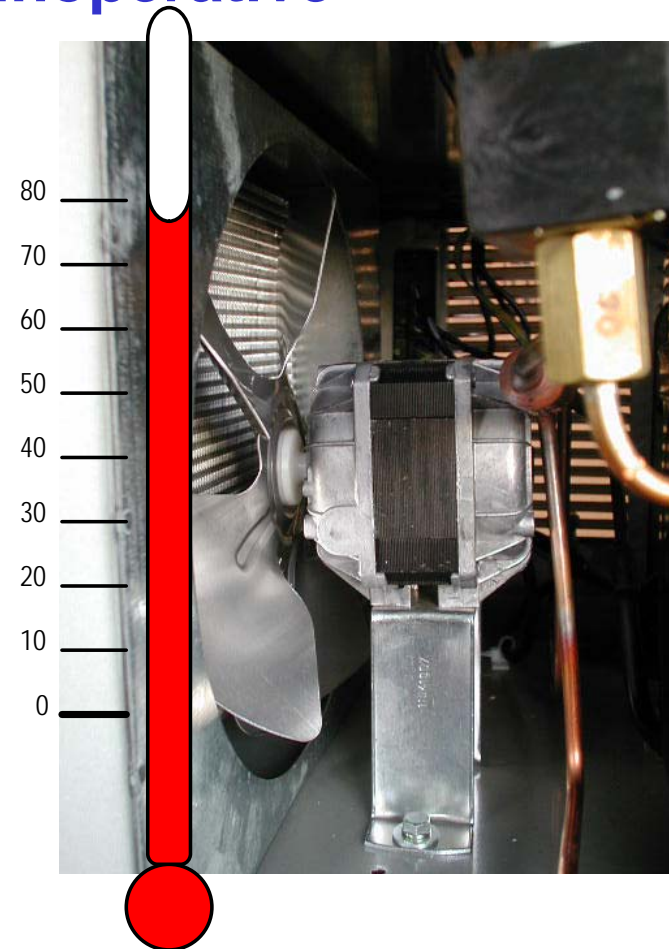


## **SERVICE ANALYSIS**

**Fan motor (air cooled version) inoperative**

Check during freezing cycle  
for:

- **Overheating of the fan motor during its operation**



**SERVICE ANALYSIS**

**No water to water cooled condenser**

Check during freezing cycle  
for:

- **Power to the water inlet solenoid valve coil**  
**(AC 106 ONLY )**





## **SERVICE ANALYSIS**

**No water to water cooled condenser**

Check during freezing cycle  
for:

- **Water shut off valve on water inlet line**



## **SERVICE ANALYSIS**

**No water to water cooled condenser**

Check during freezing cycle for:

- **Correct operation of high pressure control (AC 106 ONLY)**

**Cut In 10 BAR**

**Cut Out 7 BAR**



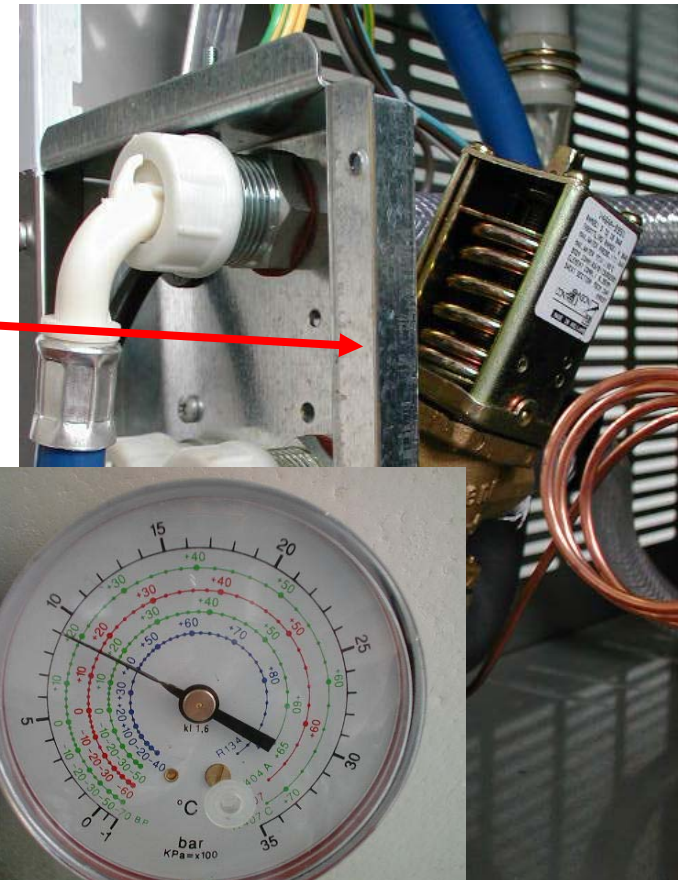
**SERVICE ANALYSIS**

**No water to the water cooled condenser (water cooled version)**

Check during freezing cycle for:

**Correct operation of the water regulating valve**

**AC 126-176 Set-up at 9 bar**

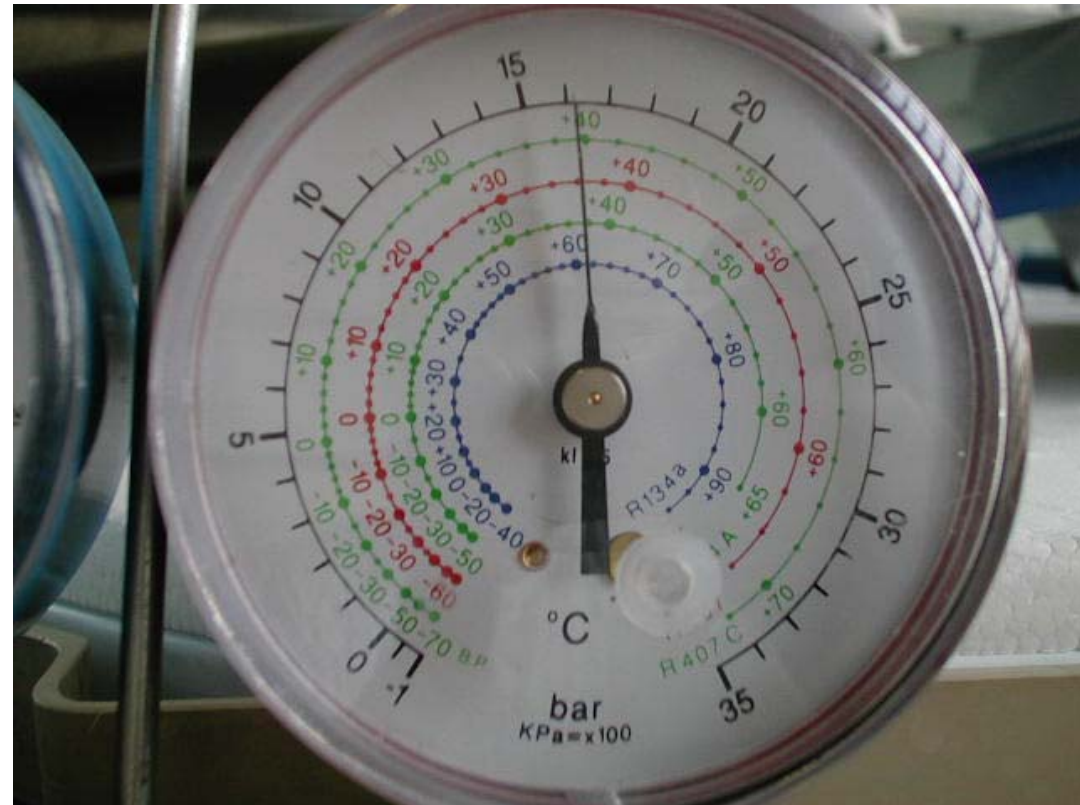


**SERVICE ANALYSIS**

**No water to the water cooled condenser (water cooled version)**

Check during freezing cycle for:

- **Correct operation of the water regulating valve (AC 206-226 set up at 16 bar - 226 PSI)**

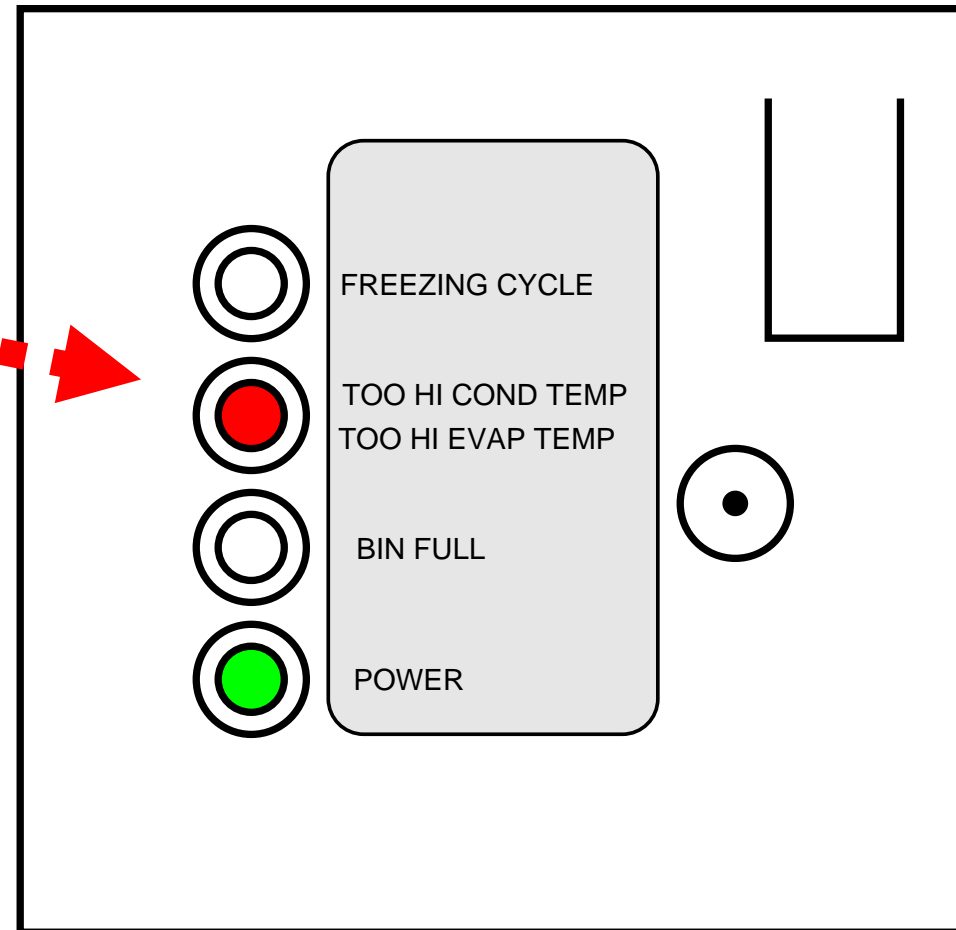




**SERVICE ANALYSIS**

The unit is OFF  
with the Red LED  
of PC Board  
**blinking.**

The reason is a  
**too high**  
**evaporating**  
**temperature**  
after 15 minutes  
from the  
beginning of the  
freezing cycle



## **SERVICE ANALYSIS**

The possible reasons are:

- No power out from the PC Board to electrical components
- No power out to compressor
- Compressor not working
- Compressor loses its efficiency
- Short or no refrigerant in the system
- Leaking of refrigerant through the hot gas valve
- Leaking of water through the water inlet valve

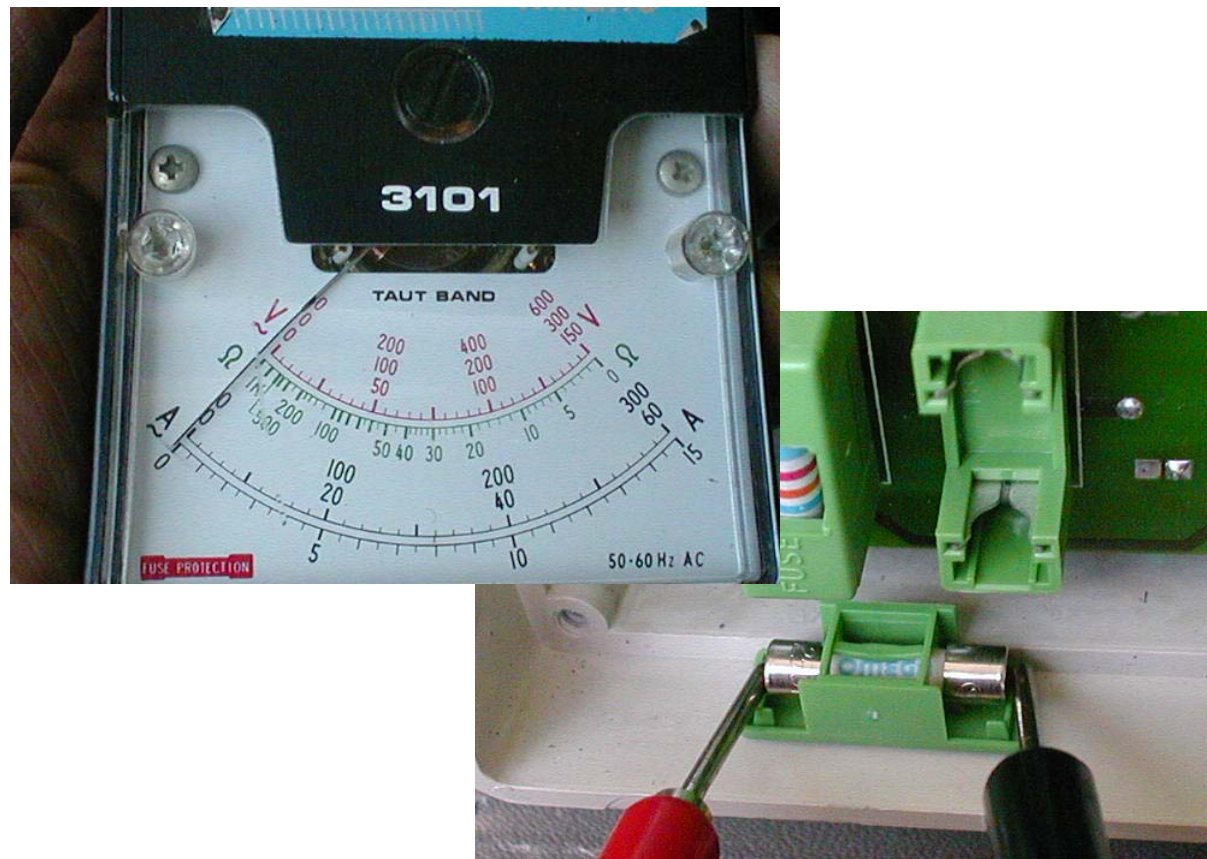


**SERVICE ANALYSIS**

**No power out from the PC Board to electrical components:**

Check for:

- **Proper conditions of the Outlet Fuse**

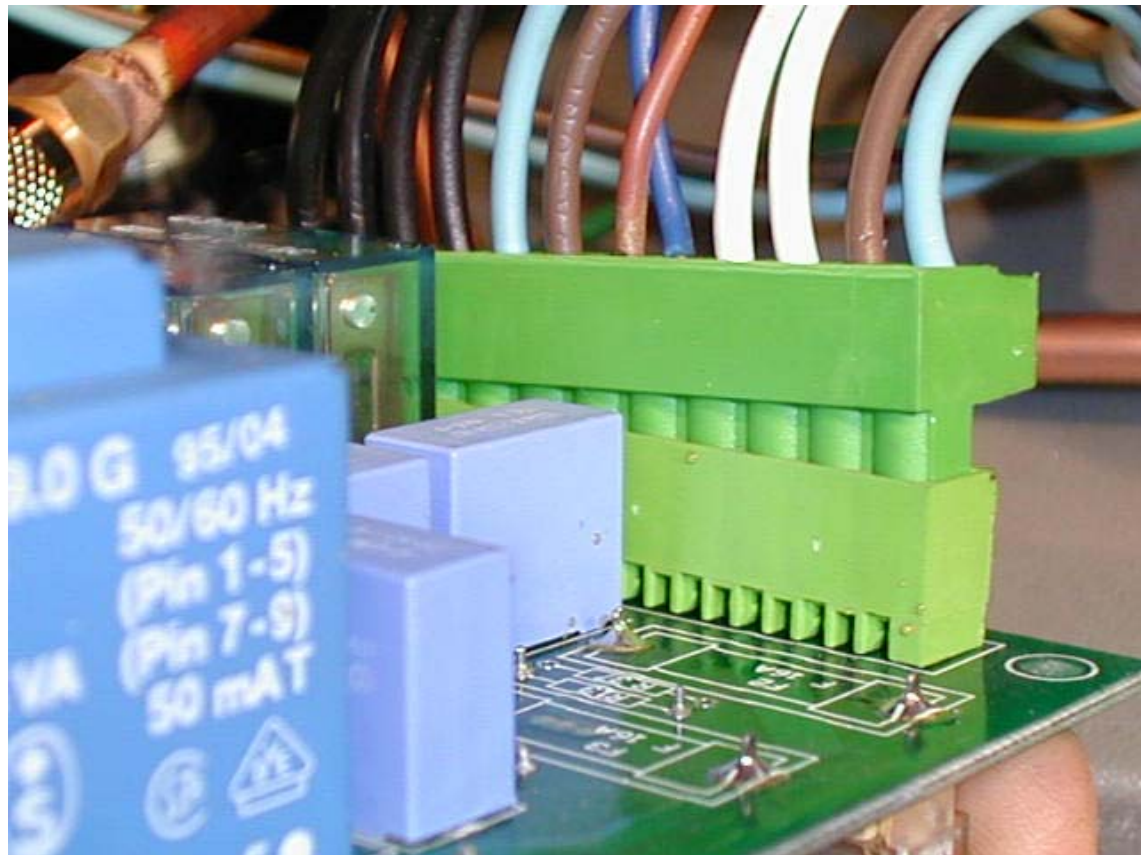


**SERVICE ANALYSIS**

**No power out from the PC Board to electrical components:**

Check for:

- **Proper location of the PC Board connector**

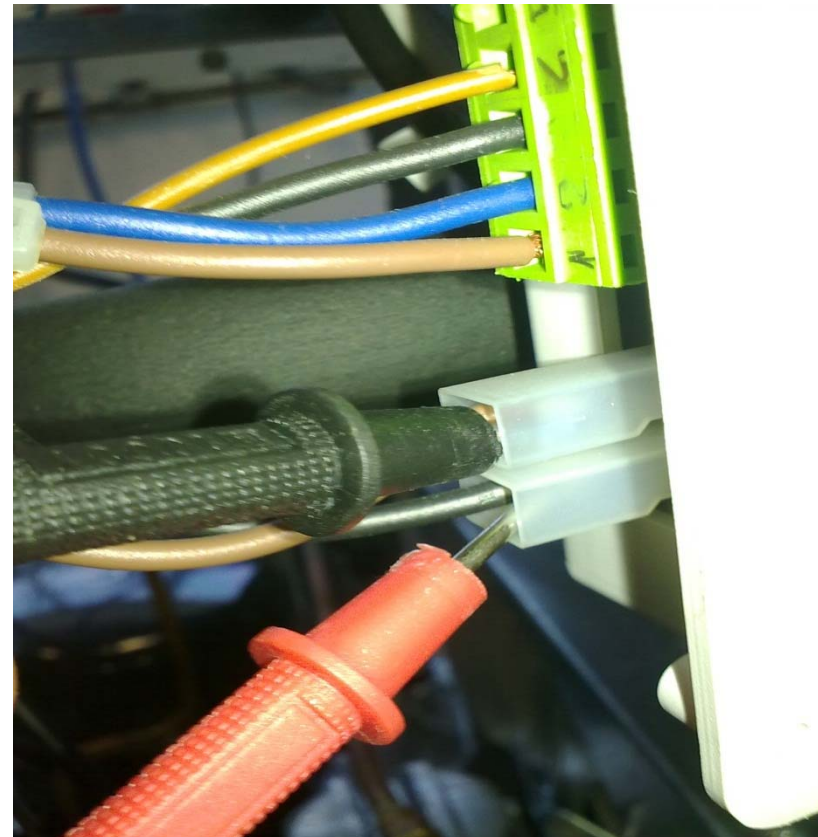


**SERVICE ANALYSIS**

**No power out to compressor :**

Check during freezing cycle for:

- **Power out on the two spade connectors of the PC Board. If no, replace PC Board**



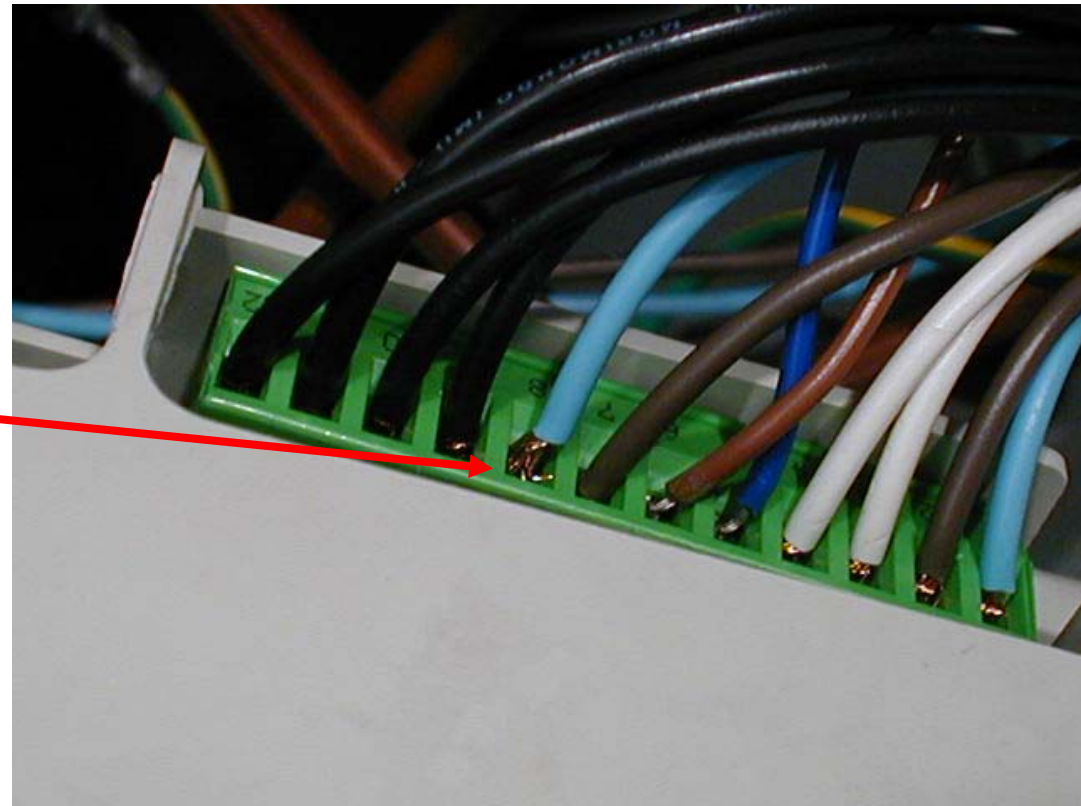


**SERVICE ANALYSIS**

**No power out to compressor :**

Check during  
freezing cycle for:

- **For any loosing  
wire connecting PC  
Board to  
compressor**

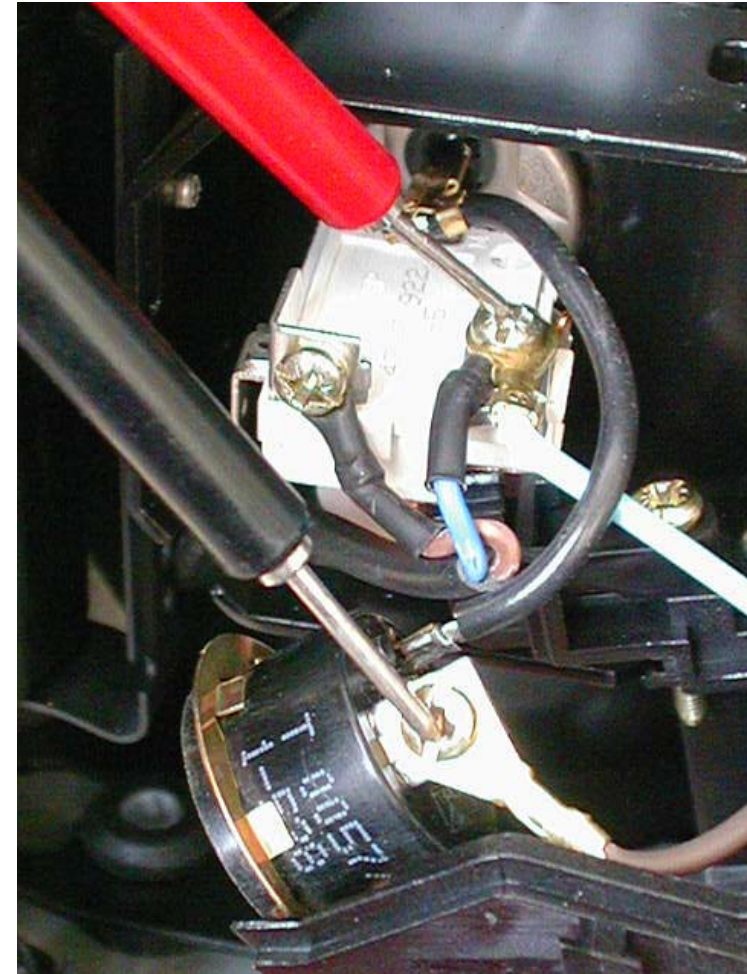


**SERVICE ANALYSIS**

**Compressor not working:**

Check during freezing cycle for:

- **Power to the compressor terminal board**

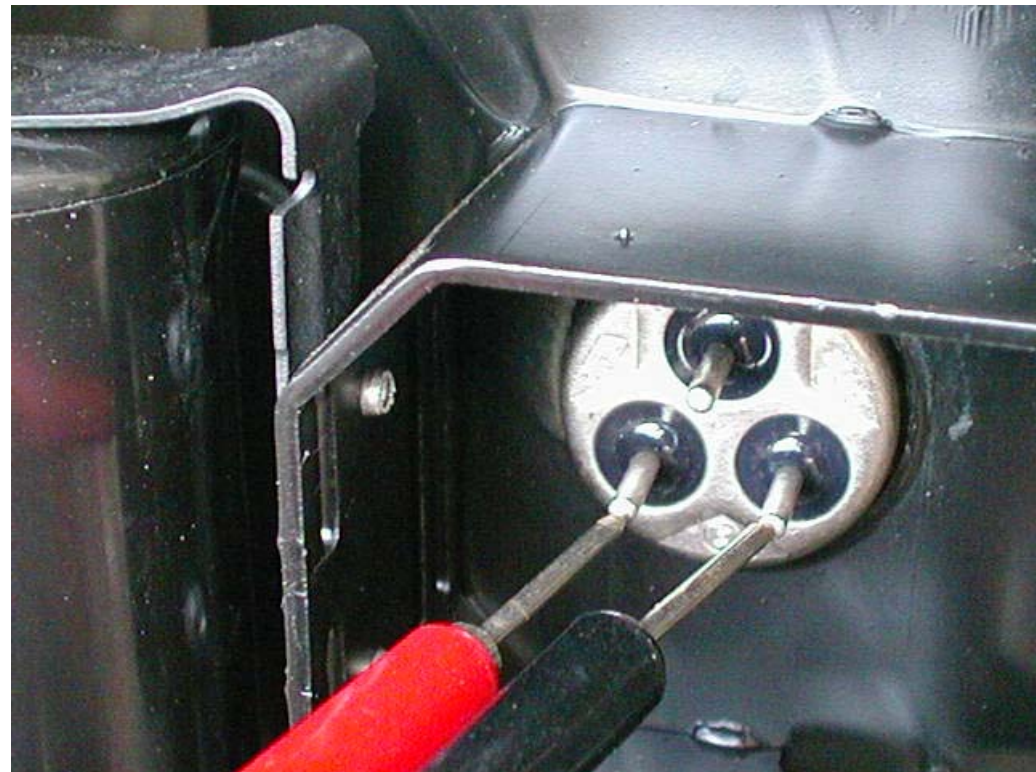


**SERVICE ANALYSIS**

**Compressor not working:**

Check during freezing cycle for:

- **With an Ohmmeter, check for electrical conductivity of the compressor windings (start and running)**







**NEW AC SERIES**

## **SERVICE ANALYSIS**

**Compressor not working:**

Check during freezing cycle for:

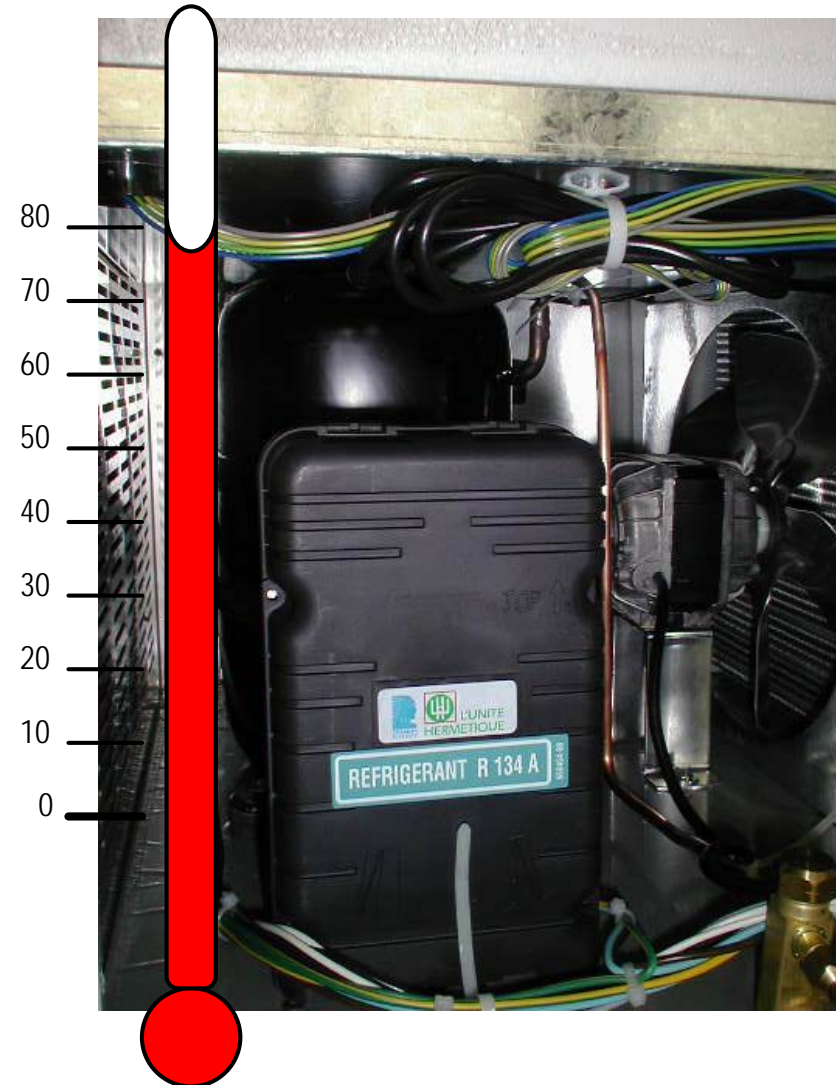
- **Locked compressor motor**

### SERVICE ANALYSIS

Compressor not working:

Check during freezing cycle for:

- **Overheating of compressor during freezing and/or harvest cycle**

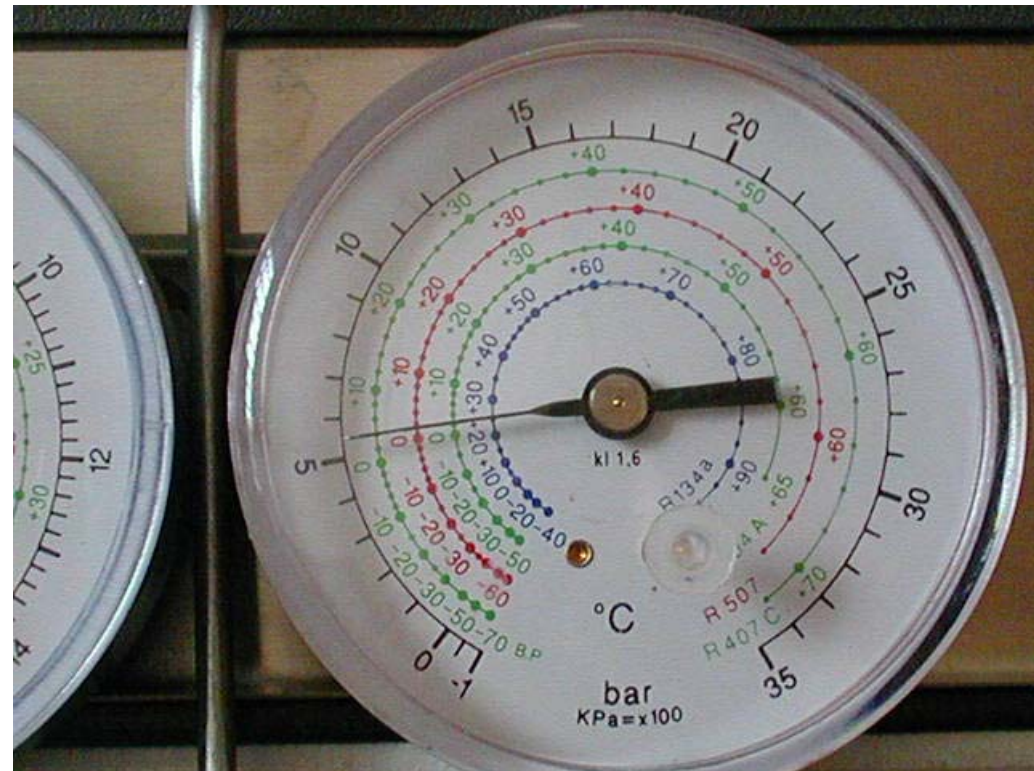


**SERVICE ANALYSIS**

Compressor loses its efficiency:

Check during freezing cycle for:

- **Too low Discharge pressure of refrigerant system**

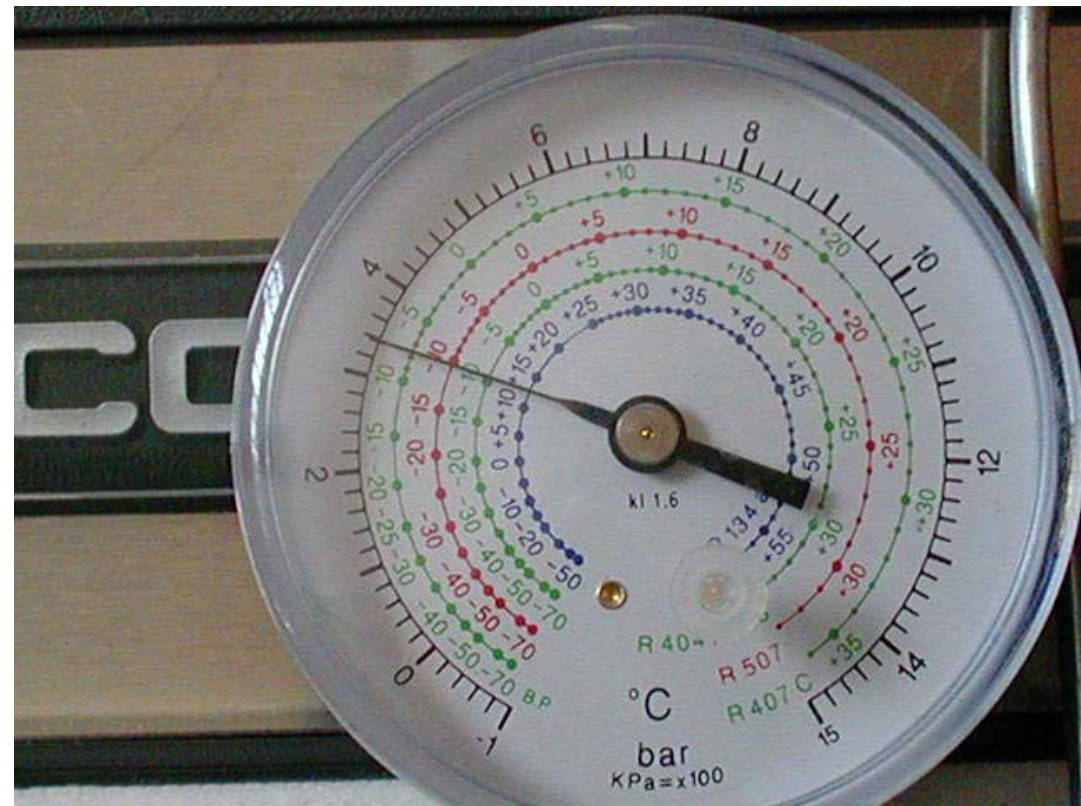


### SERVICE ANALYSIS

Compressor loses its efficiency:

Check during freezing cycle for:

- Too hi Suction pressure of refrigerant system





**SERVICE ANALYSIS**

Compressor loses its efficiency:

Check during freezing cycle for:

- **Too low compressor amps drawn**

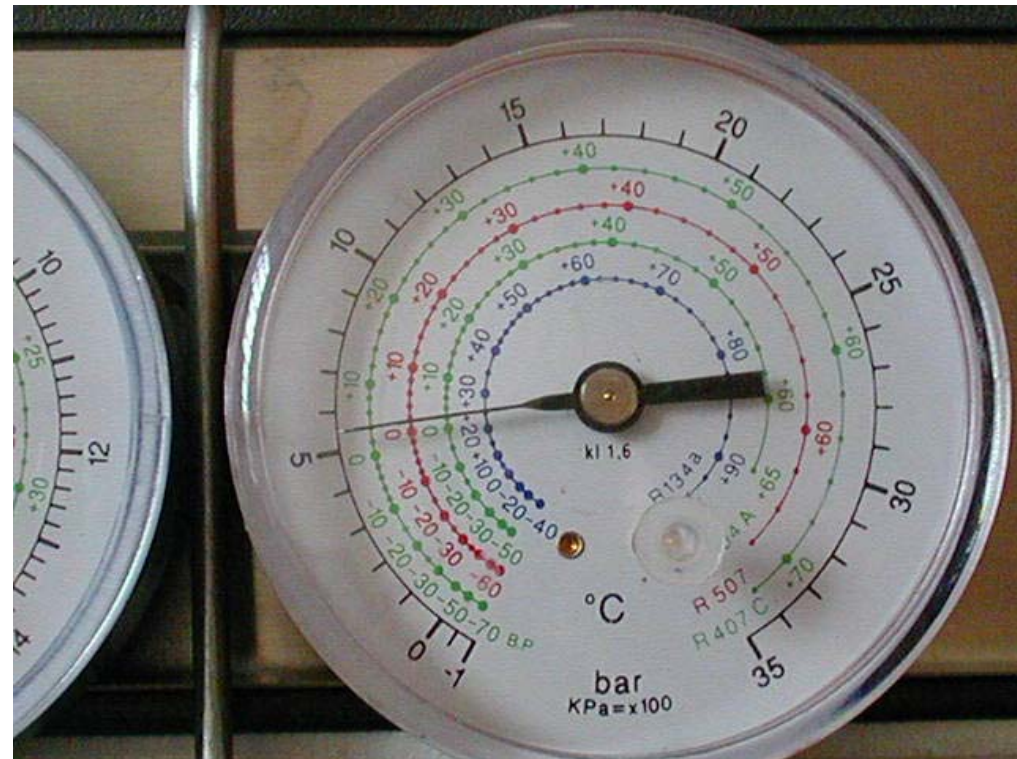


**SERVICE ANALYSIS**

**Short or no refrigerant in the system**

Check during freezing cycle for:

- **Too low Discharge pressure of refrigerant system**



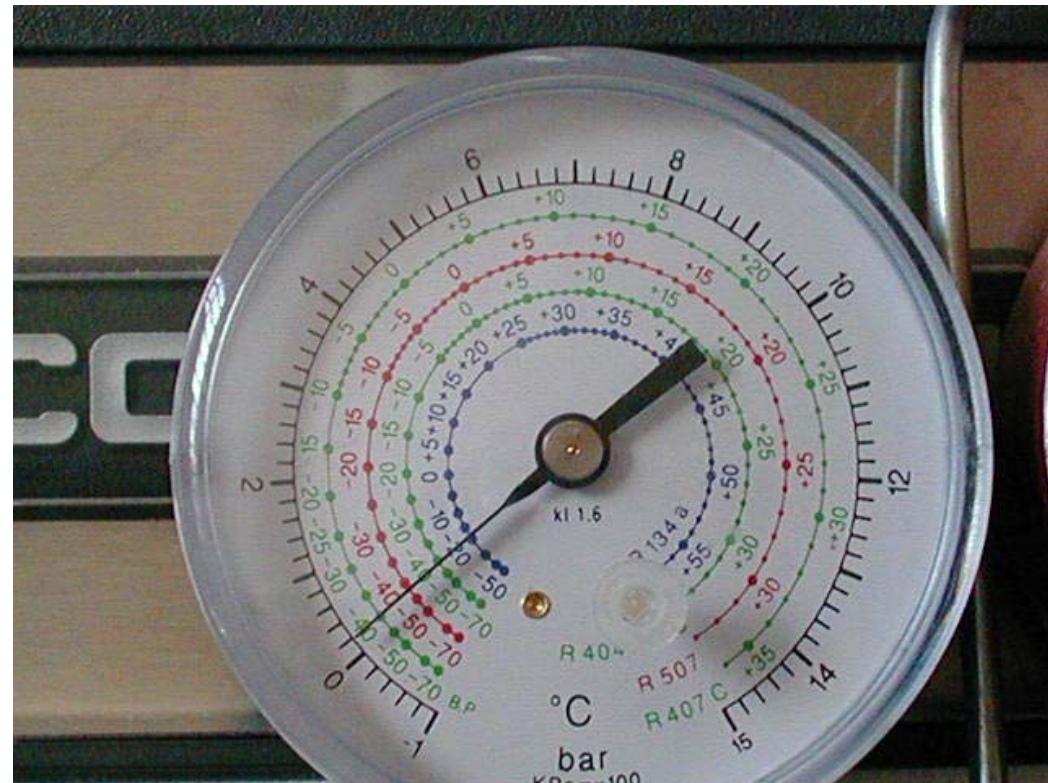


## **SERVICE ANALYSIS**

**Short or no refrigerant in the system**

Check during freezing cycle for:

- **Too low Suction pressure of refrigerant system**



**SERVICE ANALYSIS**

**Short or no refrigerant in the system**

Check during freezing cycle  
for:

- **Proper frost of the evaporator serpentine**



**SERVICE ANALYSIS**

**Leaking of refrigerant through the hot gas valve**

Check during freezing cycle for:

- **Too hi temperature of evaporator serpentine**



**SERVICE ANALYSIS**

**Leaking of refrigerant through the hot gas valve**

Check during freezing cycle  
for:

- **Very poor frost of the evaporator serpentine**



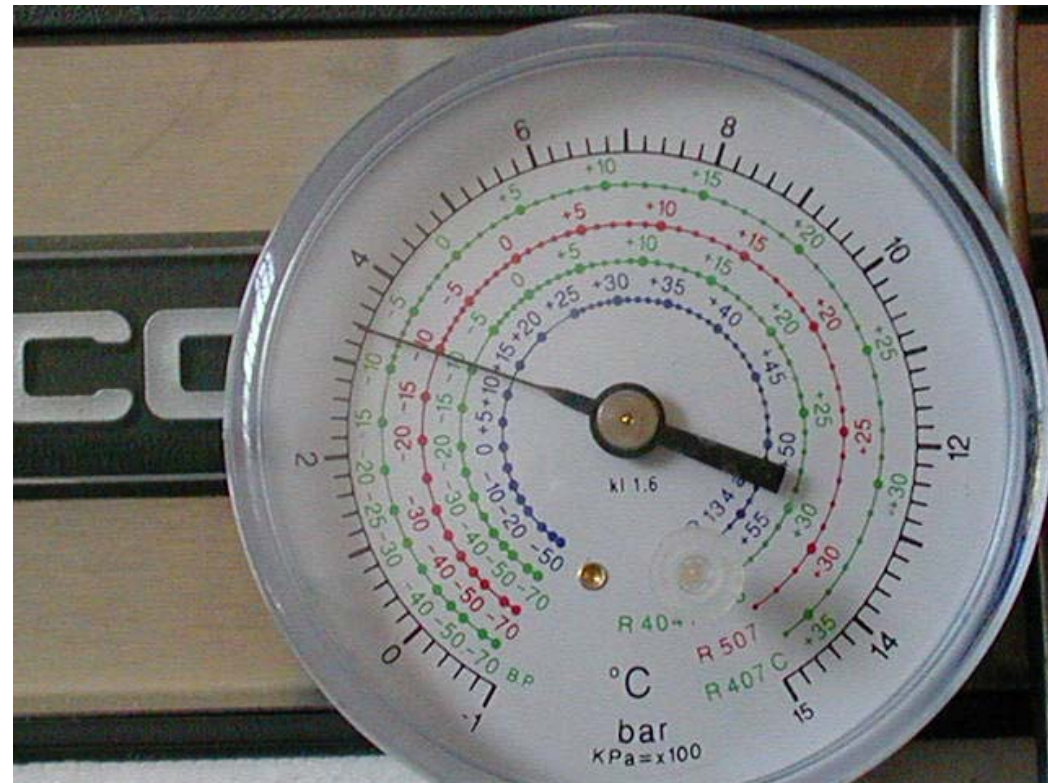


**SERVICE ANALYSIS**

**Leaking of refrigerant through the hot gas valve**

Check during freezing cycle for:

- Too high Suction pressure**



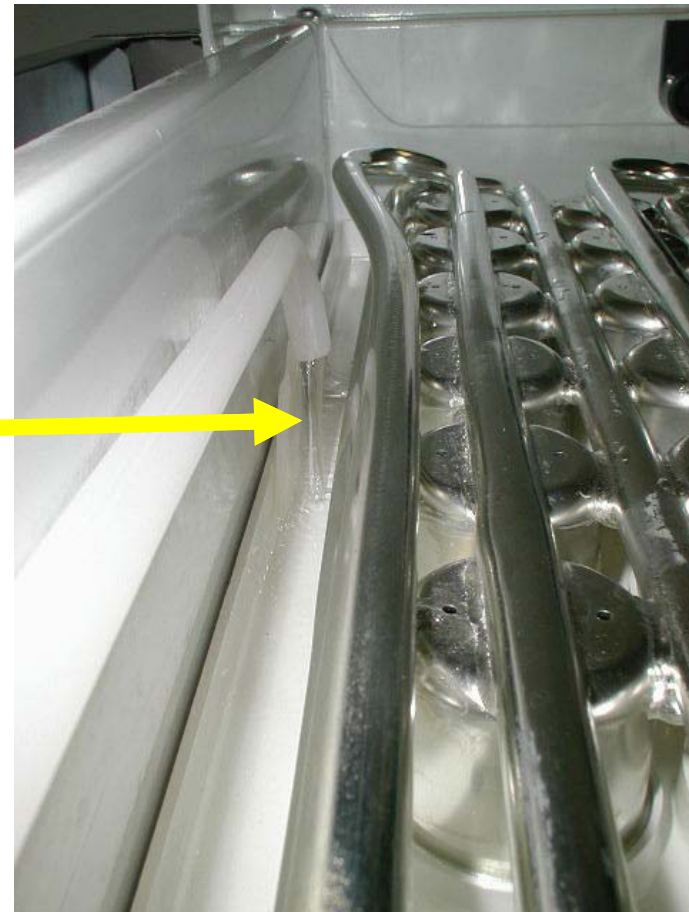


**SERVICE ANALYSIS**

**Leaking of water through the water inlet valve**

Check during freezing cycle for:

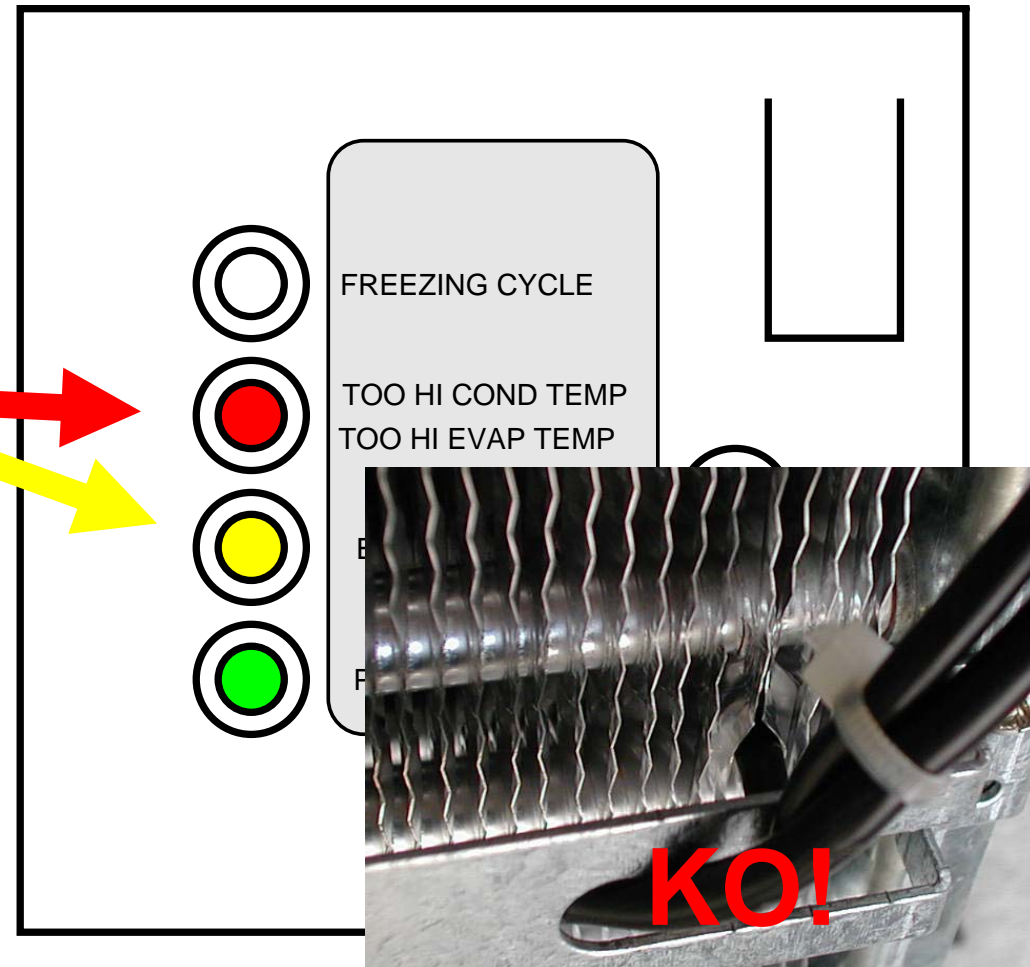
- **Water flowing through the water inlet tube**



**SERVICE ANALYSIS**

The unit is OFF  
with both the Red  
and Yellow LEDs of  
PC Board **ON**  
**steady.**

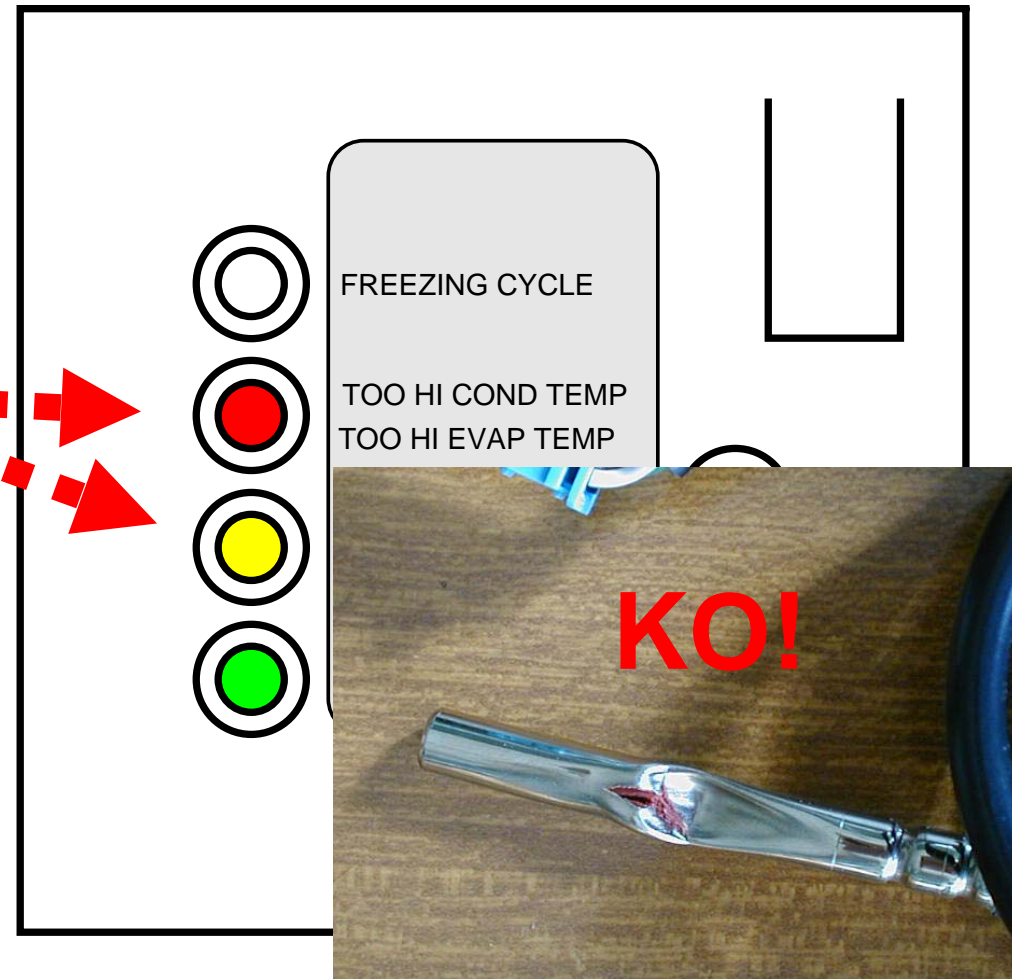
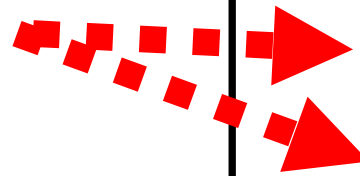
The reason is the  
**Condenser Sensor**  
**OUT OF ORDER.**



**SERVICE ANALYSIS**

The unit is OFF  
with both the Red  
and Yellow LEDs of  
PC Board  
**blinking.**

The reason is the  
**Evaporator Sensor**  
**OUT OF ORDER.**



**Scotsman**<sup>®</sup>  
*Ice Systems*

**NEW AC SERIES**

**END**

A scenic view of a lake with a forested hillside in the background and houses visible through the trees. The word 'END' is overlaid in large blue letters.