Scotsman®
Ice Systems

NEW AC SERIES

AC SERIES CUBERS

TECHNICAL SERVICE TRAINING

Welcome to another Scotsman technical service presentation. This one will cover the electronic units of new AC "..6" Series Ice Cube Machines.

Models are **AC 106, AC 126, AC 176, AC 206 and AC 226.**

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NEW AC SERIES

AC 106 A/W

Max. Ice Production = 50 kg/24h*

Max. Storage Bin Capacity = 23 Kg

* 10/10°C= Air & Water Inlet Temperature

Medium Gourmet
20 g

34,5 mm x 30,5 mm x 29,5 mm

Large Gourmet
39 g

41,5 mm x 38 mm x 35 mm

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NEW AC SERIES

AC 126 A/W

Max. Ice Production = 71 Kg/24h*

Max. Storage Bin Capacity = 39 Kg

* 10/10°C= Air & Water Inlet Temperature

Small Gourmet
8 g

25,5 x mm 22,5 mm x 21 mm

Medium Gourmet
20 g

34,5 mm x 30,5 mm x 29,5 mm

Large Gourmet
39 g

41,5 mm x 38 mm x 35 mm

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NEW AC SERIES

AC 176 A/W

Max. Ice Production = 85 Kg/24h*

Max. Storage Bin Capacity = 48 Kg

* 10/10°C= Air & Water Inlet Temperature

Small Gourmet
8 g

25,5 x mm 22,5 mm x 21 mm

Medium Gourmet
20 g

34,5 mm x 30,5 mm x 29,5 mm

Large Gourmet
39 g

41,5 mm x 38 mm x 35 mm

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NEW AC SERIES

AC 206 A/W

Max. Ice Production = 137 Kg/24h*

Max. Storage Bin Capacity = 50 Kg

* 10/10°C= Air & Water Inlet Temperature

Small Gourmet
8 g

25,5 x mm 22,5 mm x 21 mm

Medium Gourmet
20 g

34,5 mm x 30,5 mm x 29,5 mm

Large Gourmet
39 g

41,5 mm x 38 mm x 35 mm

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Ice Systems

NEW AC SERIES

AC 226 A/W

Max. Ice Production = 150 Kg/24h*

Max. Storage Bin Capacity = 70 Kg

* 10/10°C= Air & Water Inlet Temperature

Small Gourmet
8 g

25,5 x mm 22,5 mm x 21 mm

Medium Gourmet
20 g

34,5 mm x 30,5 mm x 29,5 mm

Large Gourmet
39 g

41,5 mm x 38 mm x 35 mm

Scotsman® Ice Systems

NEW AC SERIES

TOPICS

On the next slides are shown the following steps by steps procedures:

- **UNPACKING**
- **INSTALLATION**
- **START UP AND OPERATIONAL CHECKS**
- **OPERATING PRINCIPLES and COMPONENTS**
- **MAINTENANCE**
- **SERVICE ANALYSIS**

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NEW AC SERIES

UNPACKING

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NEW AC SERIES

UNPACKING

The machines are supplied in a carton box secured by two plastic strips to a wooden base. Check first the outside conditions of carton box and wooden base then cut the two plastic strips, remove the tape and then the carton box.

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NEW AC SERIES

UNPACKING

Visually inspect the exterior of the machine then open the bin door and remove from the inside the:

- water supply inlet tube
- water outlet tube
- leg kit
- sanitizing bag

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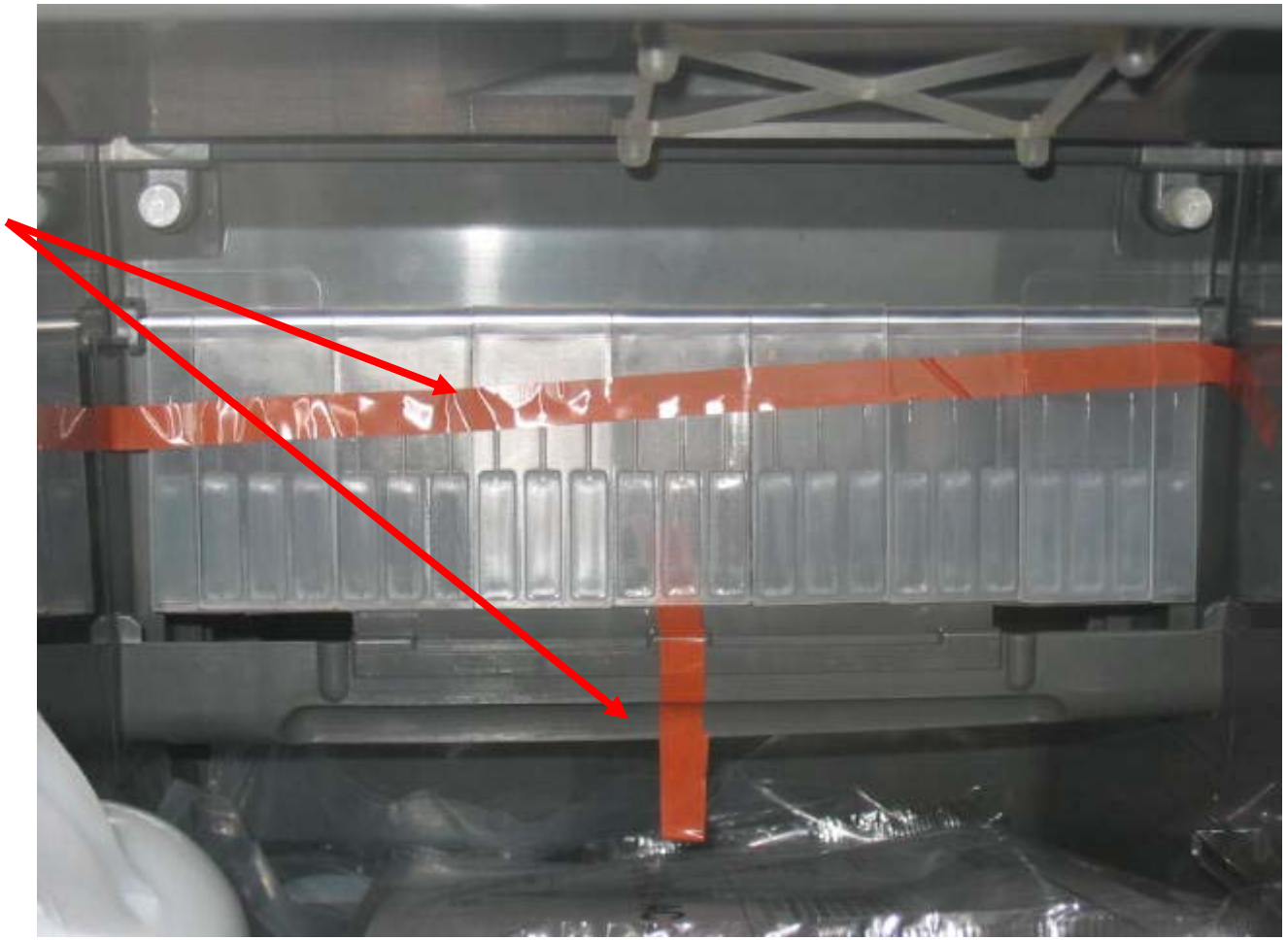
NEW AC SERIES

UNPACKING

Remove the adhesive tapes securing the curtain and the spray platen to the front of the water sump.



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NEW AC SERIES

INSTALLATION

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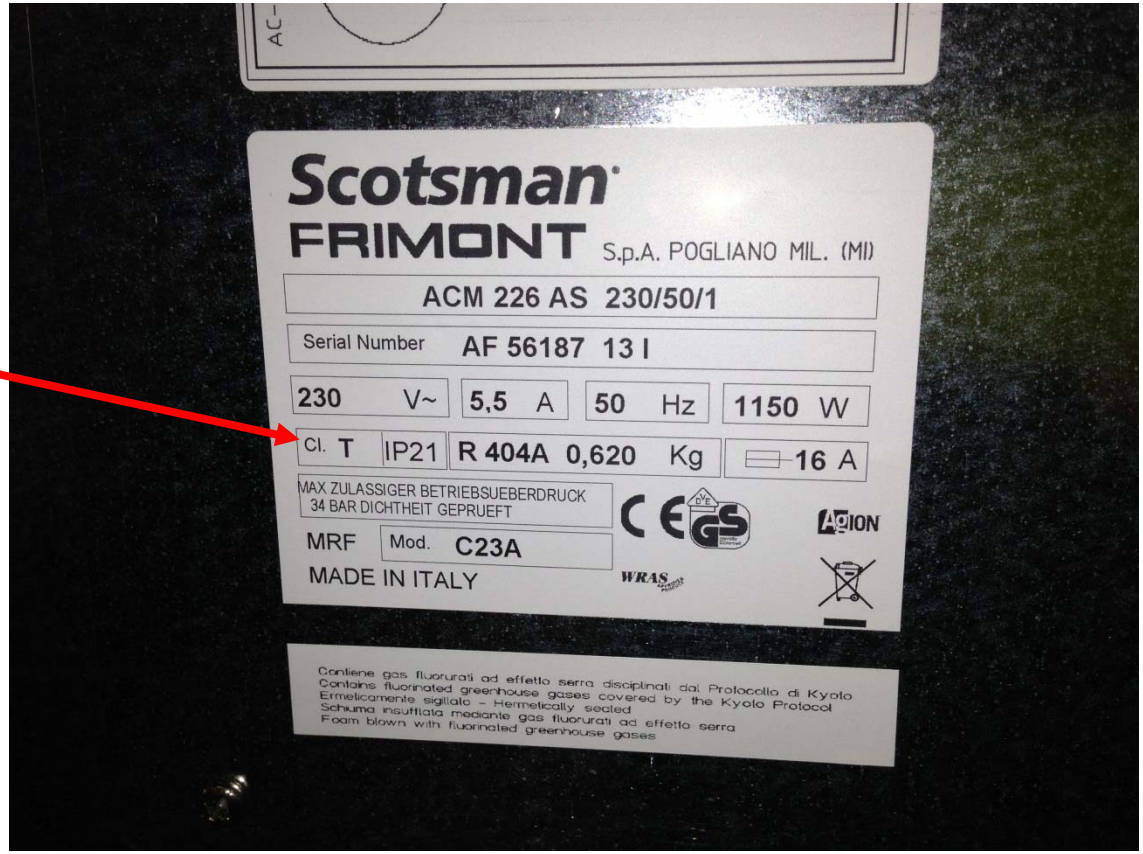
NEW AC SERIES

INSTALLATION

Check the data plate of the machine located on the rear panel for correct voltage as well as for the proper wiring/fuse size.

Remember that all machines require a solid earth wire.



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NEW AC SERIES

INSTALLATION

Check for the correct water and ambient conditions that should be:

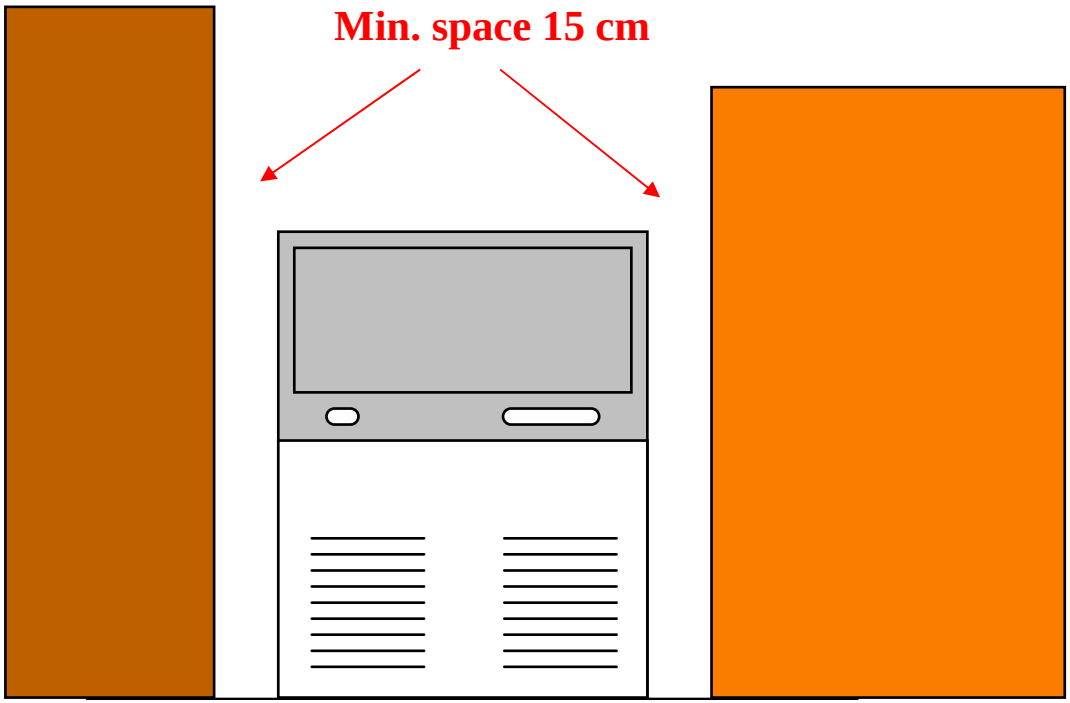
• Min. ambient temperature	10ºC (50F)
• Max. ambient temperature	40ºC (100F)
• Min. water temperature	5ºC (40F)
• Max. water temperature	35ºC (90F)
• Min. water pressure	1 bar (14 PSI)
• Max. water pressure	5 bar (70 PSI)

Scotsman Ice Systems

NEW AC SERIES

INSTALLATION

Adequate space must be left for proper water and electrical connections on the rear side of the machine. A minimum clearance of 15 cm on both sides for best routing air.



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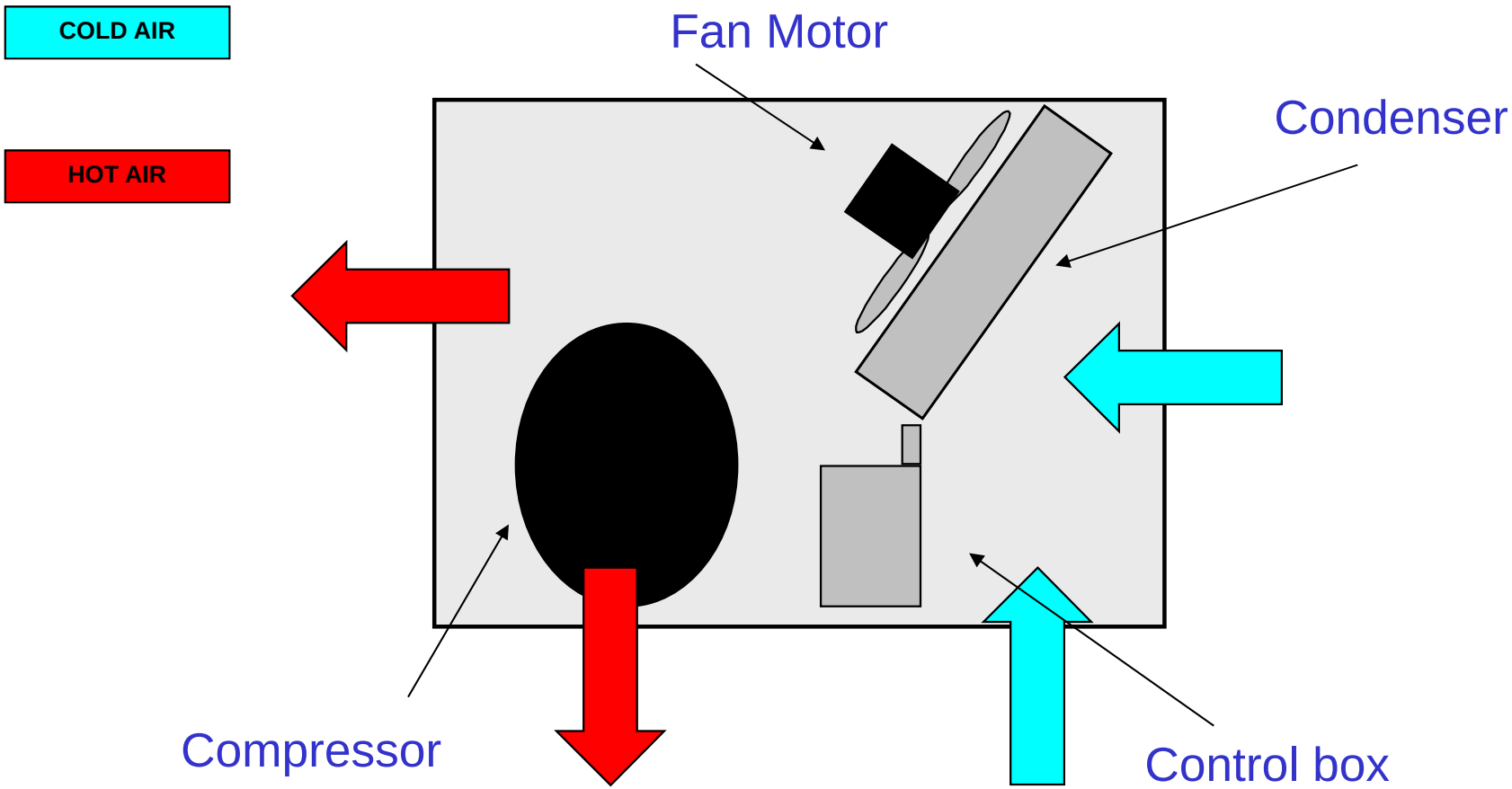
NEW AC SERIES

INSTALLATION - AIR CIRCULATION



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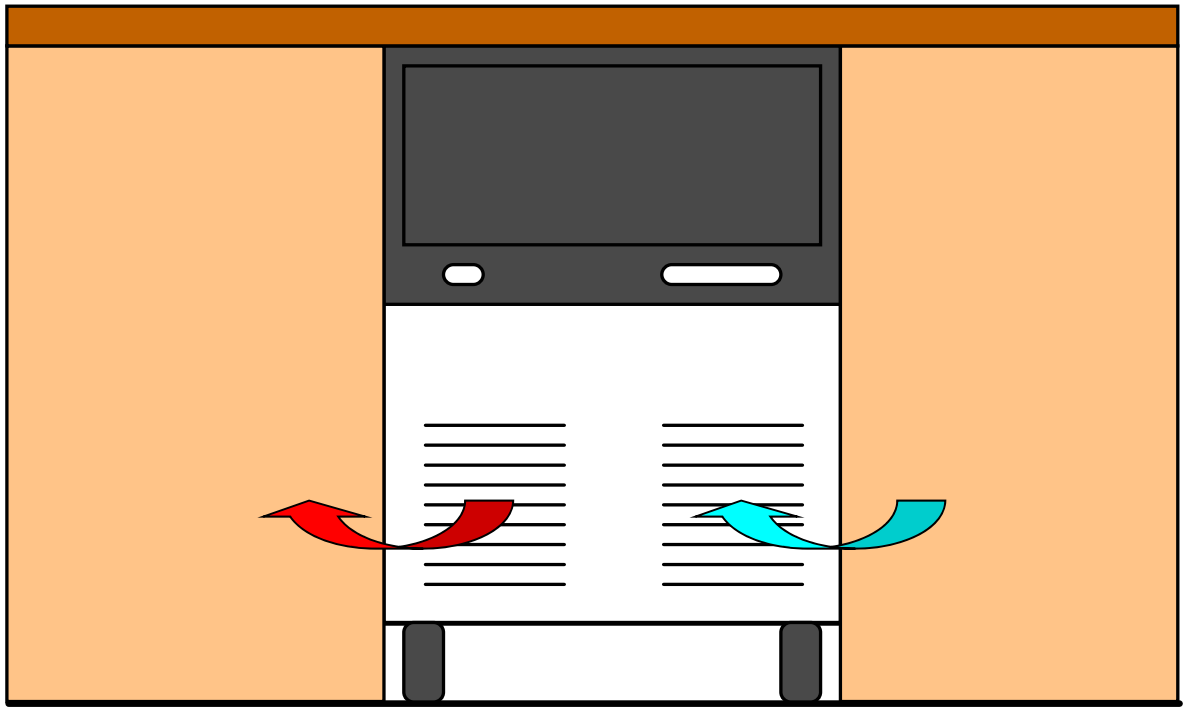
NEW AC SERIES

INSTALLATION

Installation under counter with no space of both sides are allowed but daily ice capacity can drop down to a maximum of 20%.



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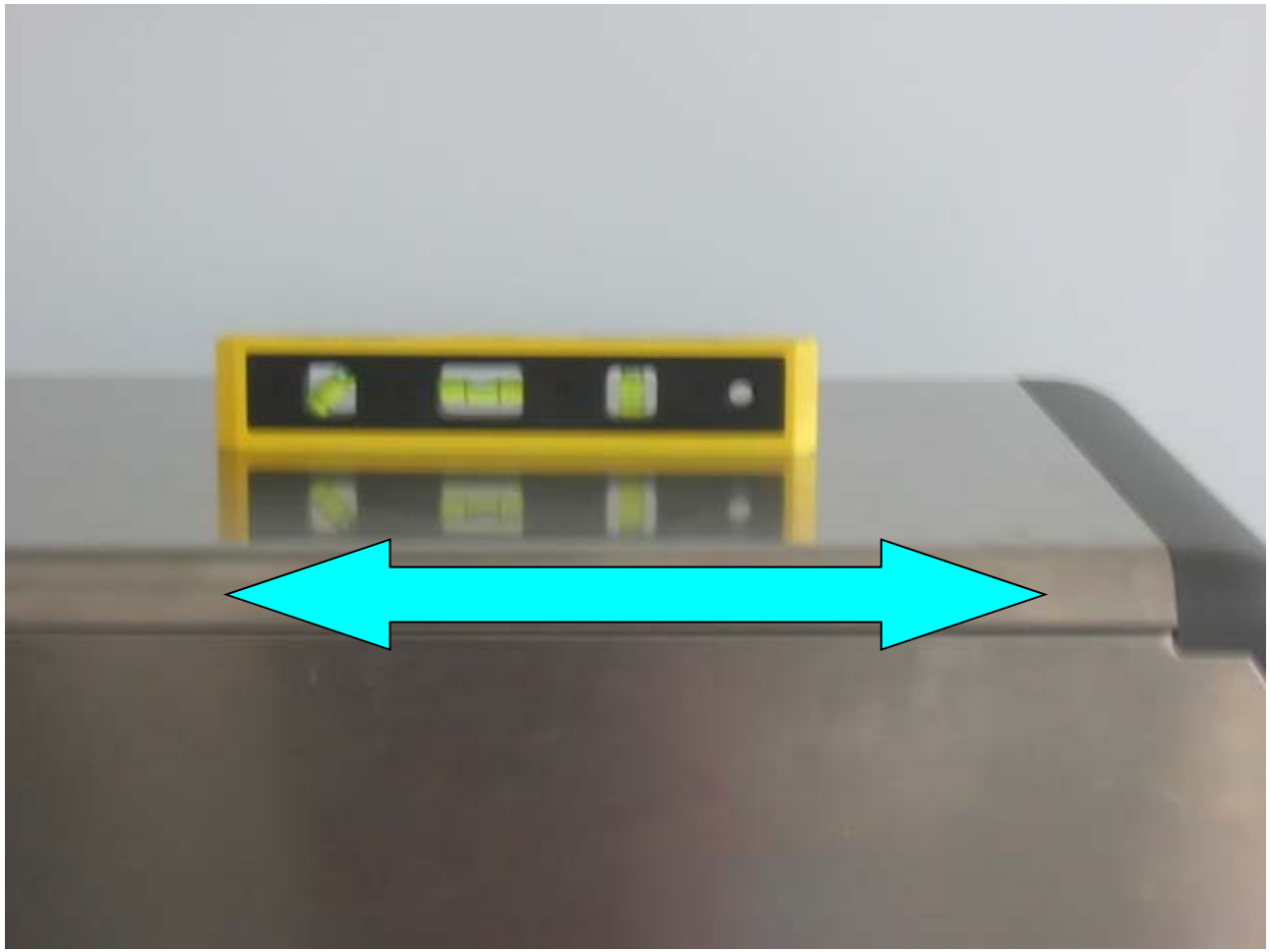
NEW AC SERIES

INSTALLATION

Level the unit on both directions front to rear and……



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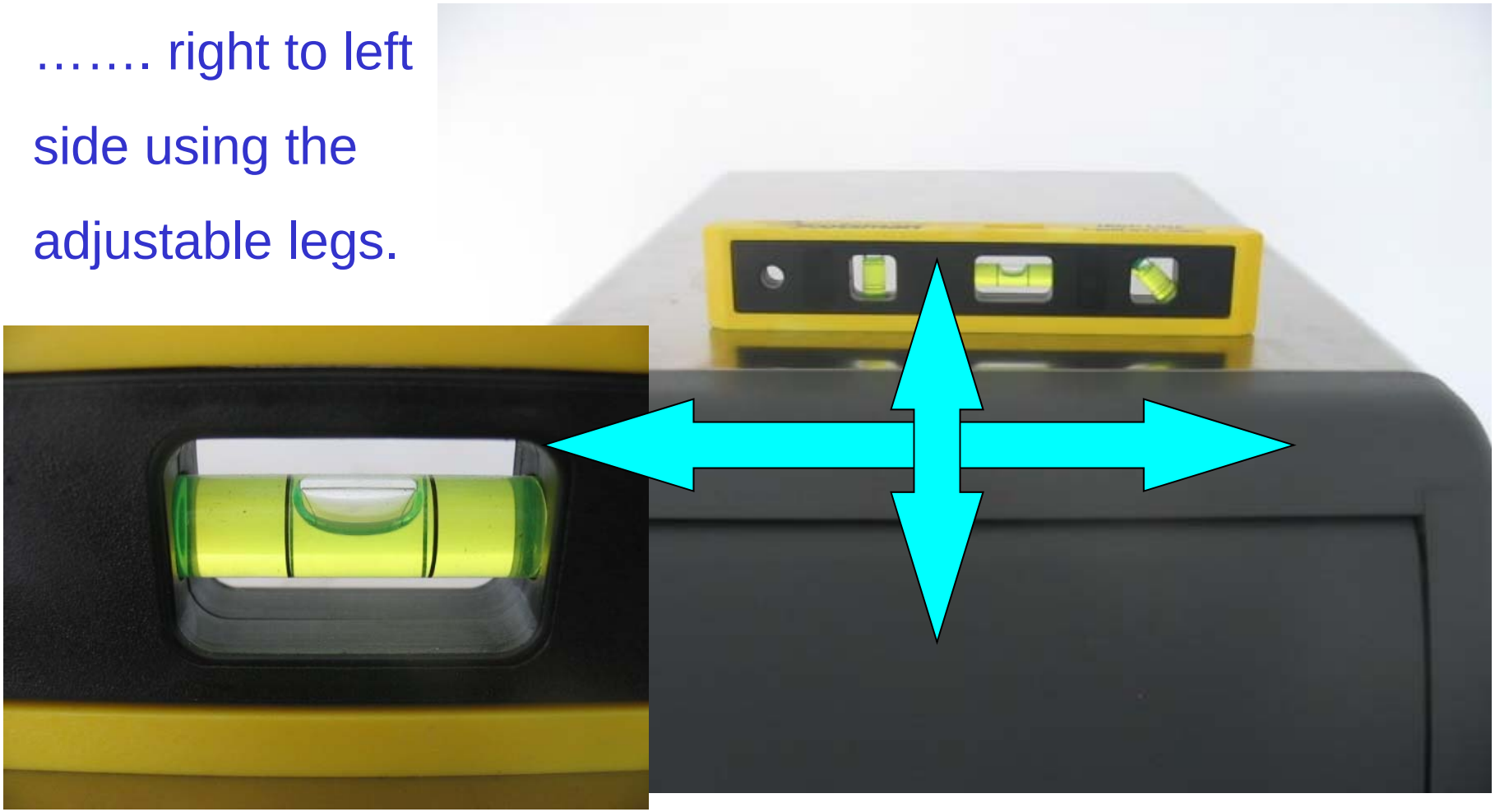
NEW AC SERIES

INSTALLATION

……. right to left side using the adjustable legs.



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NEW AC SERIES

INSTALLATION - ELECTRICAL

Install, on the cable supply with the machine, an adequate electrical plug according to the local standards and regulations.

Maximum voltage variation should be ±10%.

Machine must be individually fuse protected.

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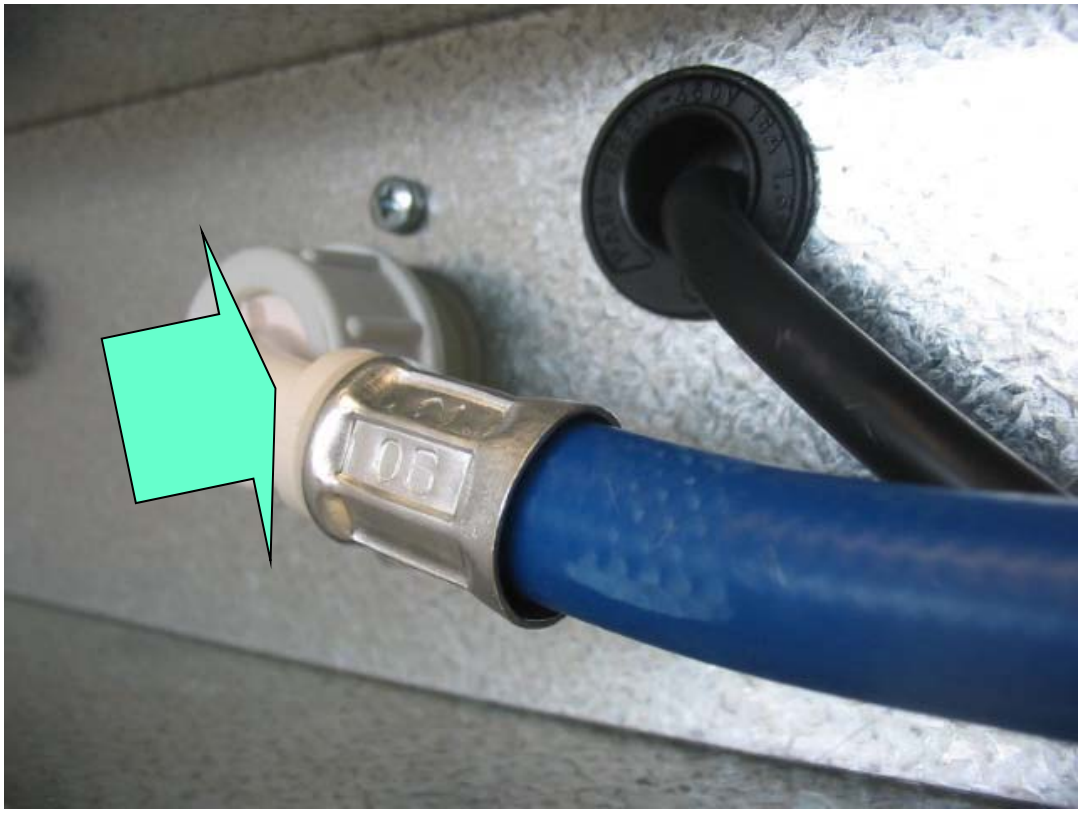
NEW AC SERIES

INSTALLATION – WATER IN

Connect the water inlet 3/4” male threat of the water inlet solenoid valve to the water supply line by means of the rubber hose provided with machine.

Install on water supply line closed to the machine a water valve (tap).



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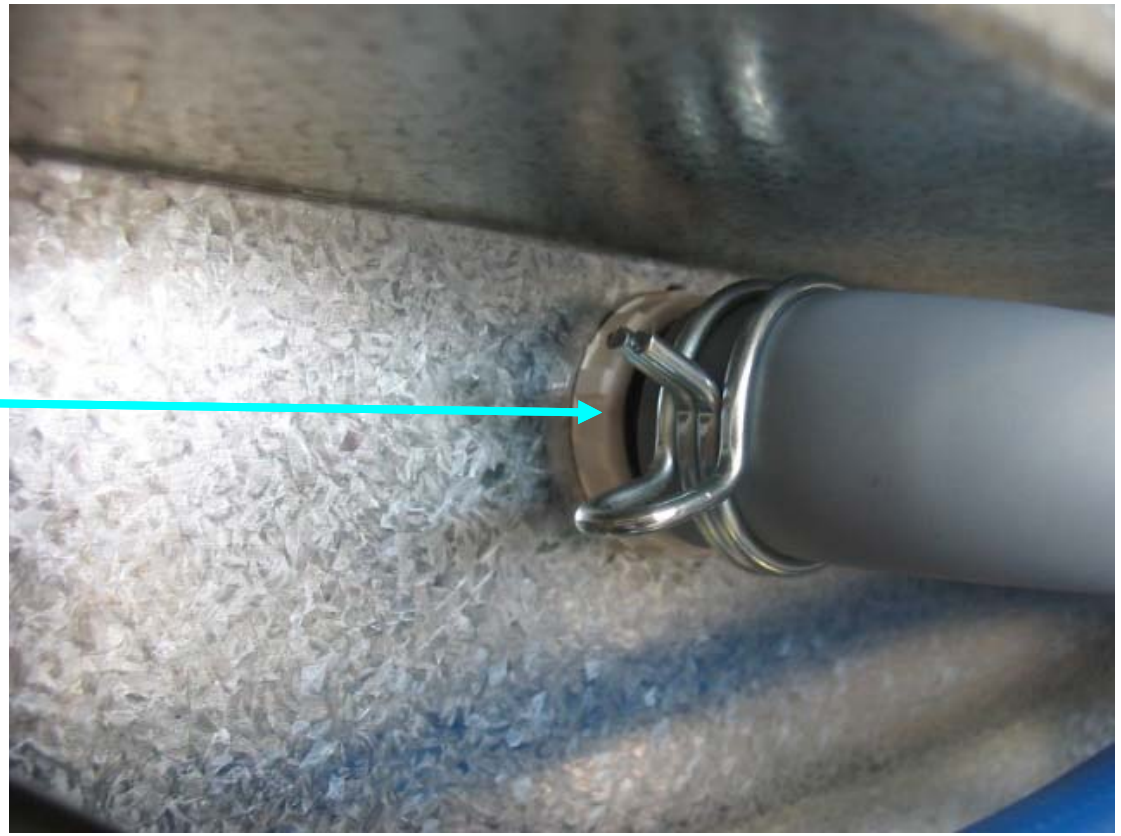
NEW AC SERIES

INSTALLATION – WATER DRAIN

Connect the 20 mm O.D. fitting of the water drain with the flexible hose supply with the machine securing it by proper clamp.



As water will be mainly drained under pressure (by water pump) it is not necessary to have a vented drain.

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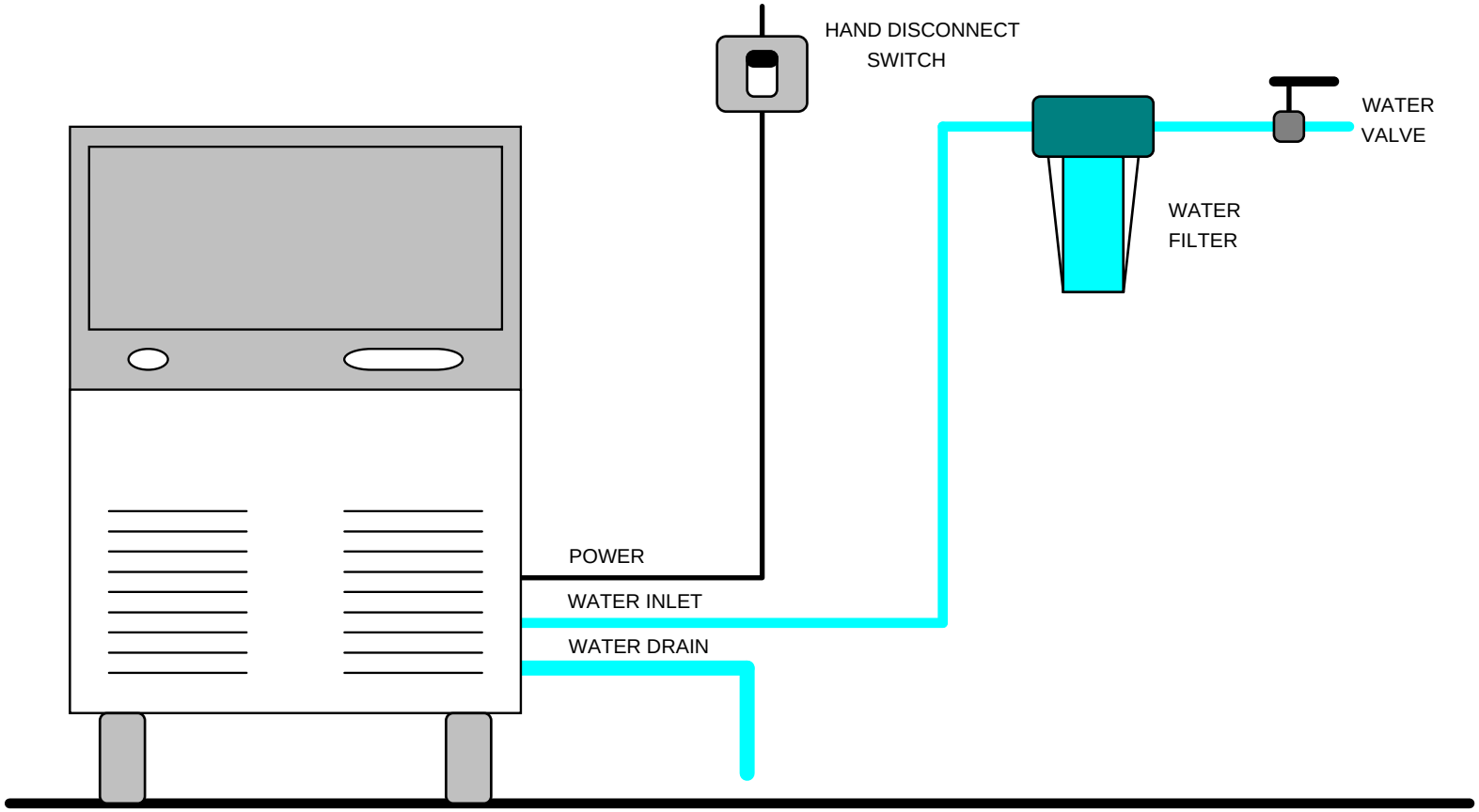
NEW AC SERIES

TYPICAL INSTALLATION

AIR COOLED VERSION



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NEW AC SERIES

INSTALLATION

AC 126 – AC 176 – AC 206 - AC 226

On the water cooled version there are two separate 3/4” male thread water inlet fittings…..

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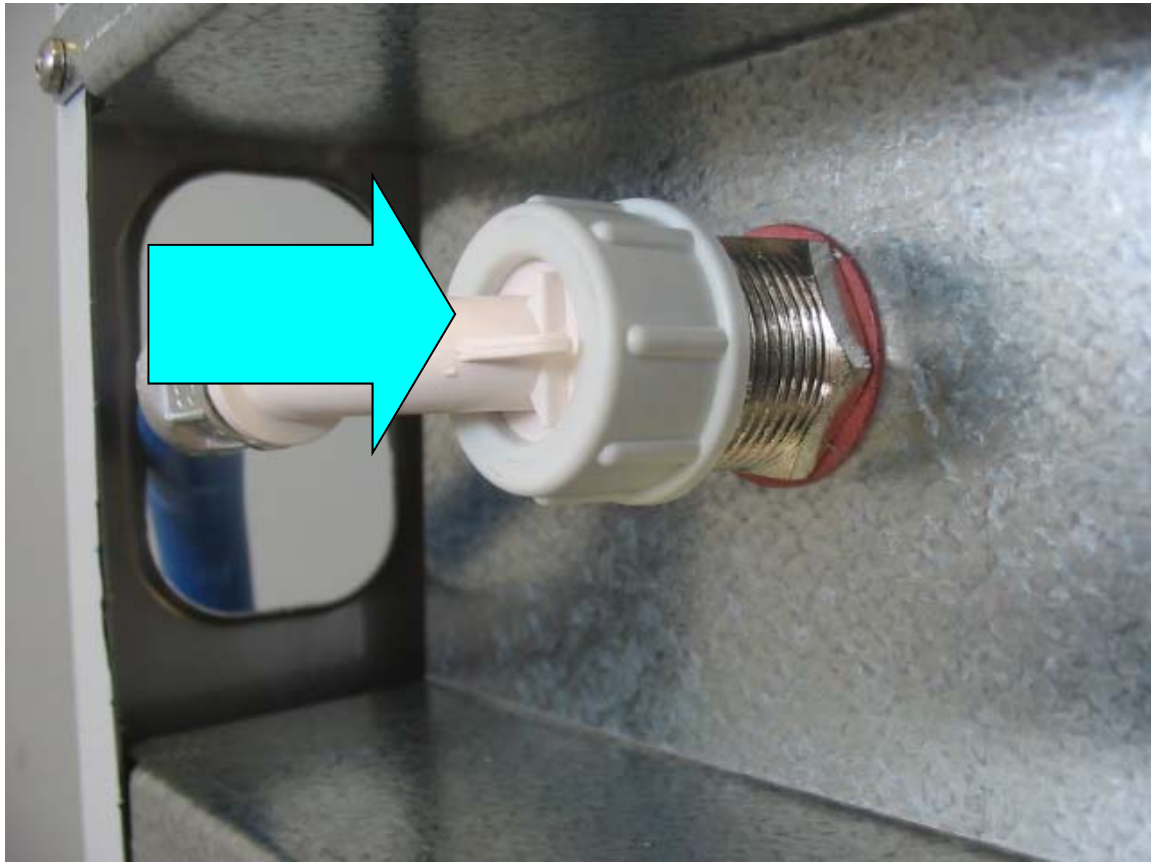
NEW AC SERIES

INSTALLATION

AC 126 – AC 176 – AC 206 - AC 226

……one connected directly to the water regulating valve that must be connect to the water supply line by means a second rubber hose provided with machine and……



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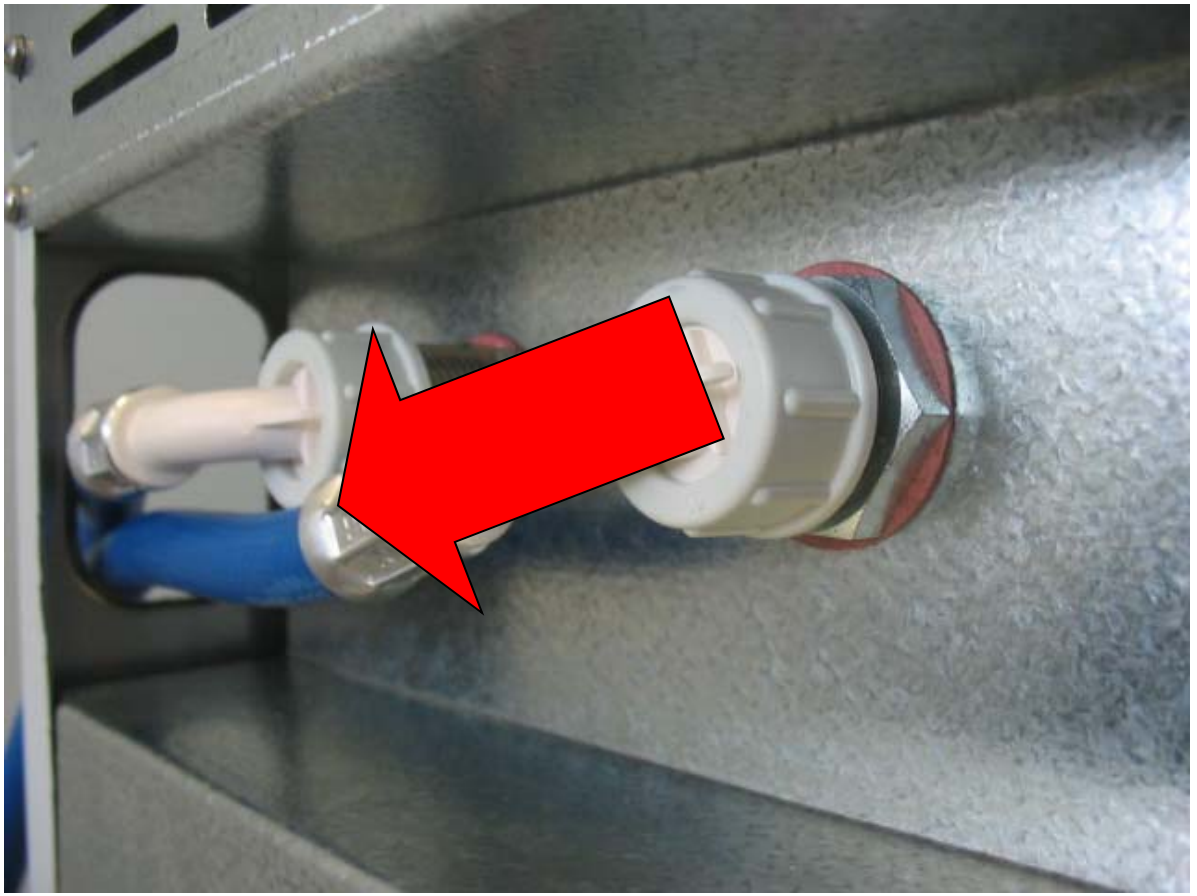
NEW AC SERIES

INSTALLATION

AC 126 – AC 176 – AC 206 - AC 226

…..a second separate drain hose must be connected to the outlet 3/4” male fitting located beside the water regulating valve.



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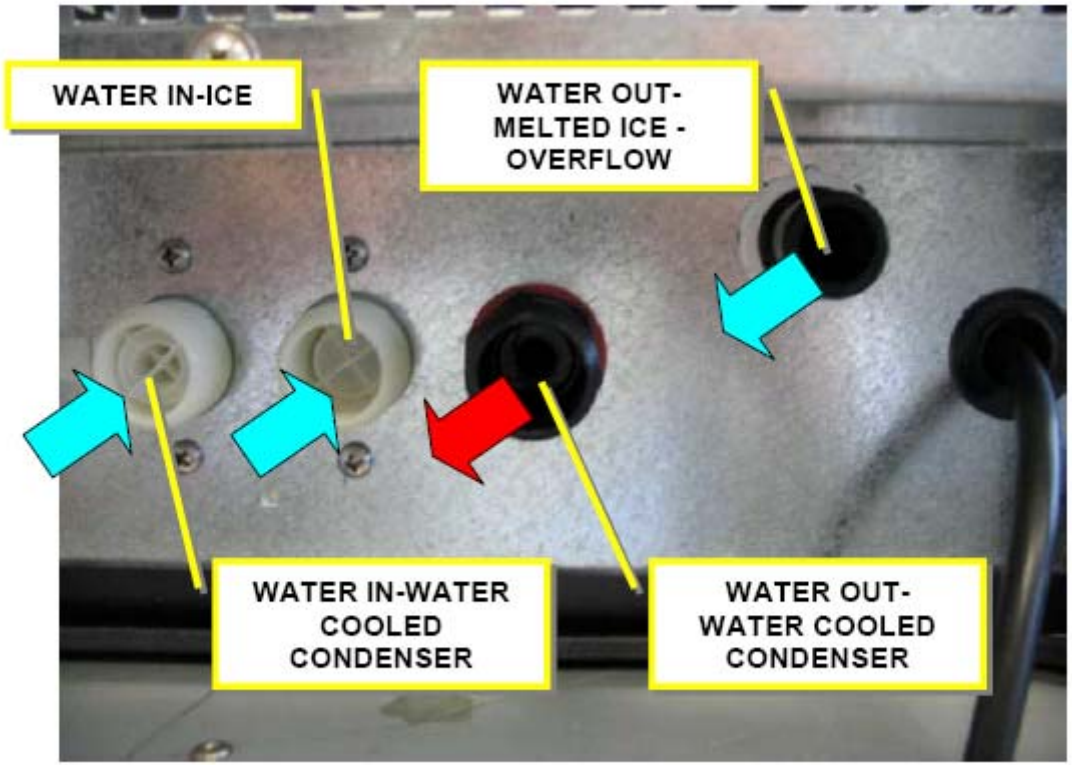
NEW AC SERIES

INSTALLATION

AC 106 ONLY

On the water cooled version of the AC 106 only there are two water inlet solenoid valve with two separated outlet fittings

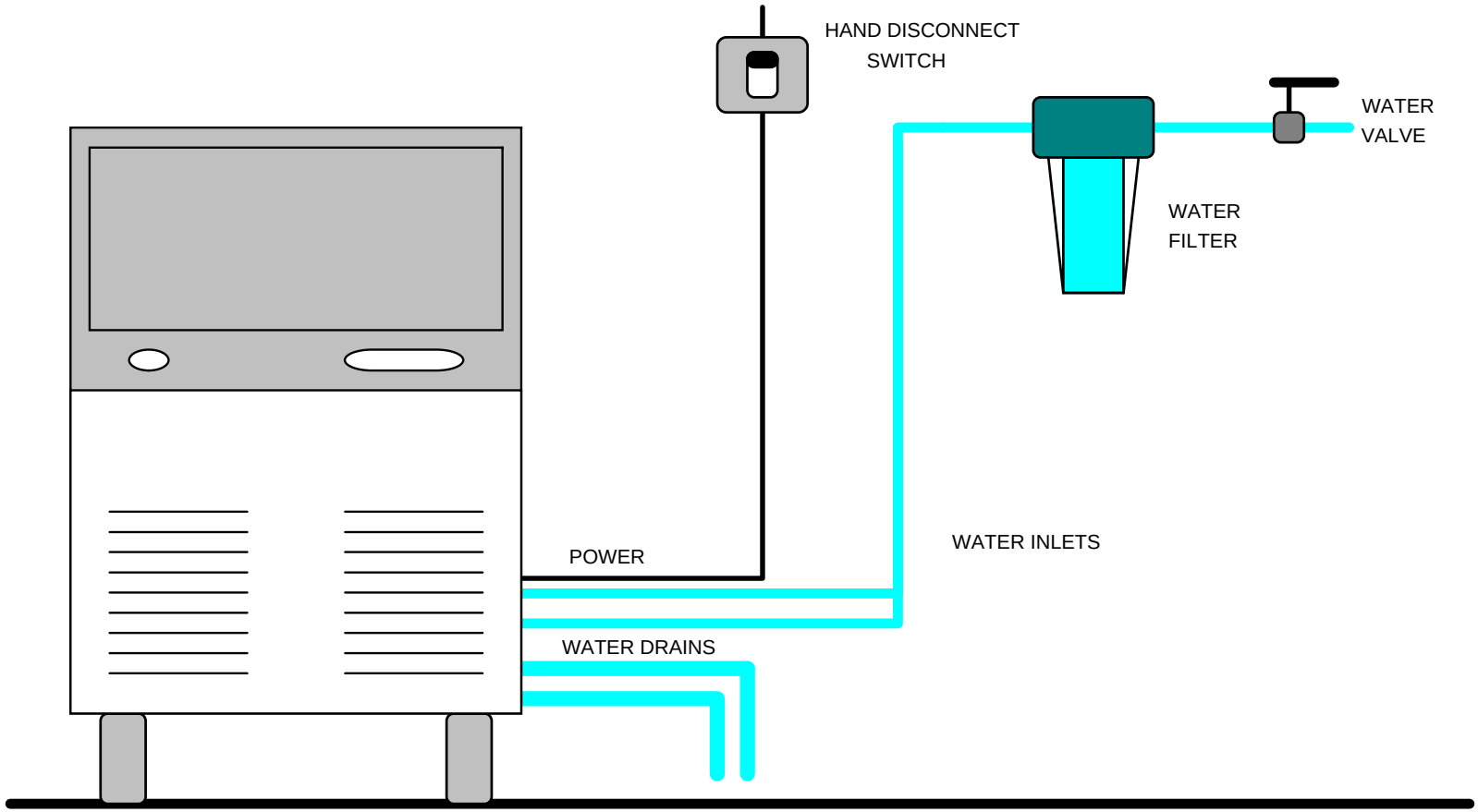


Scotsman® Ice Systems

NEW AC SERIES

TYPICAL INSTALLATION

WATER COOLED VERSION



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START UP AND OPERATIONAL CHECKS

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Open the water tap/valve and Switch ON the power on the electrical supply line.

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NEW AC SERIES

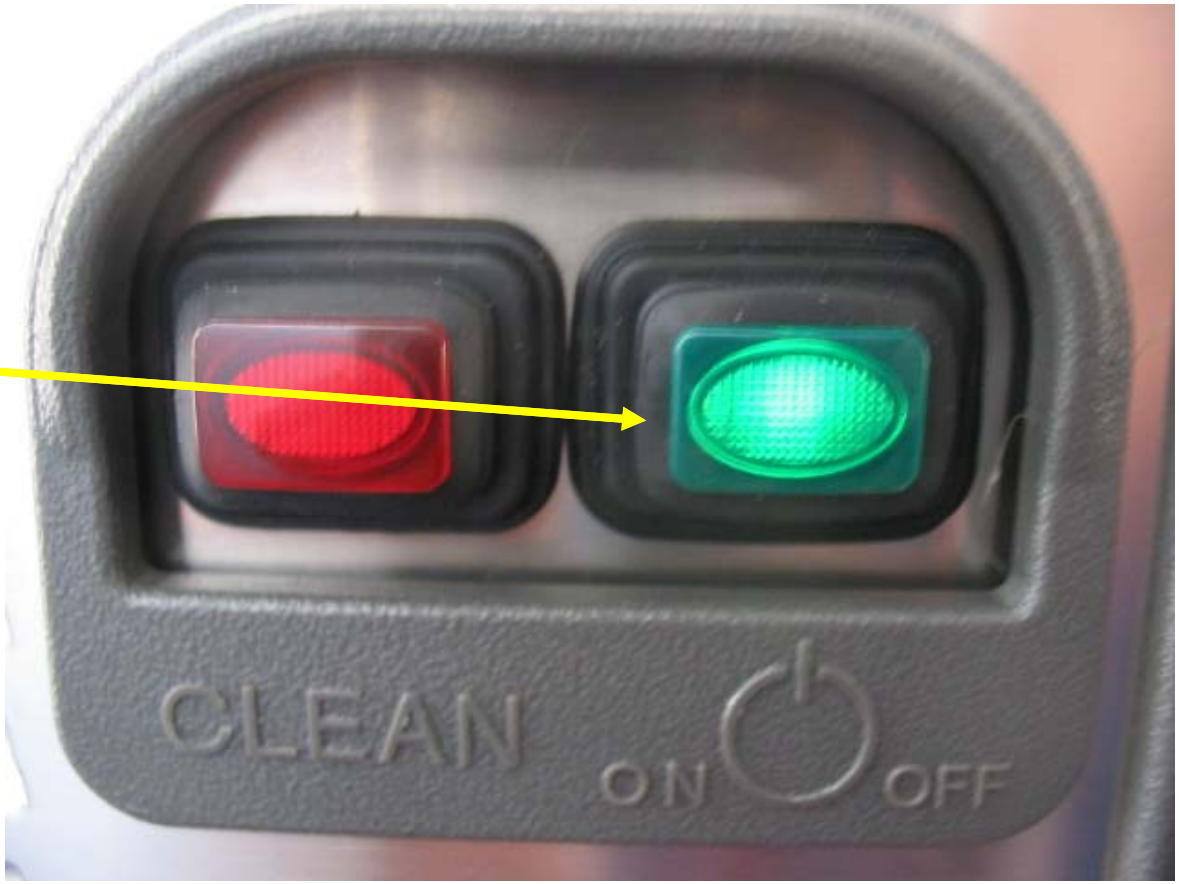
START UP AND OPERATIONAL CHECKS

Push the Green

Push Button

Switch to Start

Up the machine



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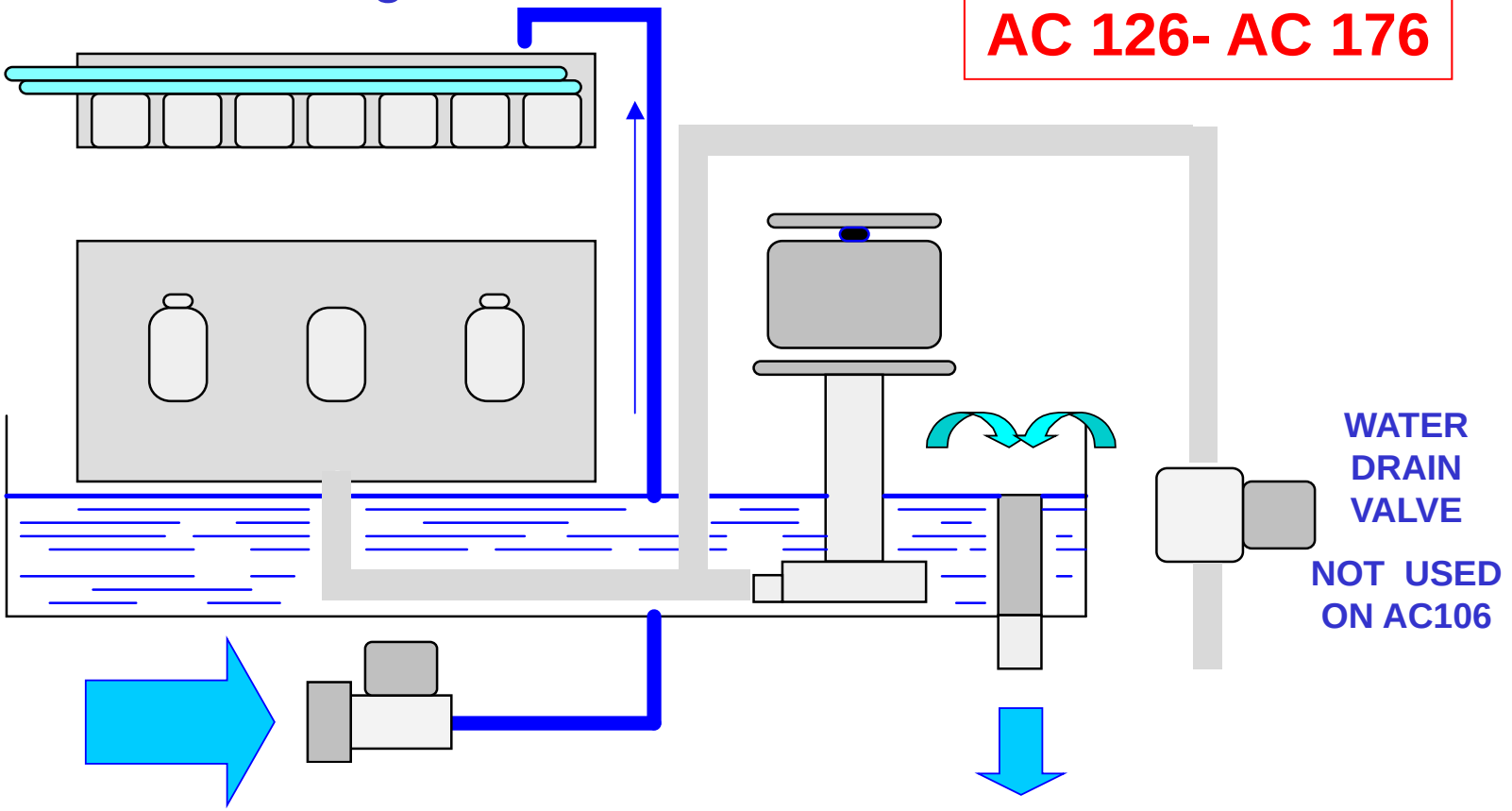
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The Ice Machine will start up automatically through the 5 minutes “Water Filling Phase”.

AC 126- AC 176



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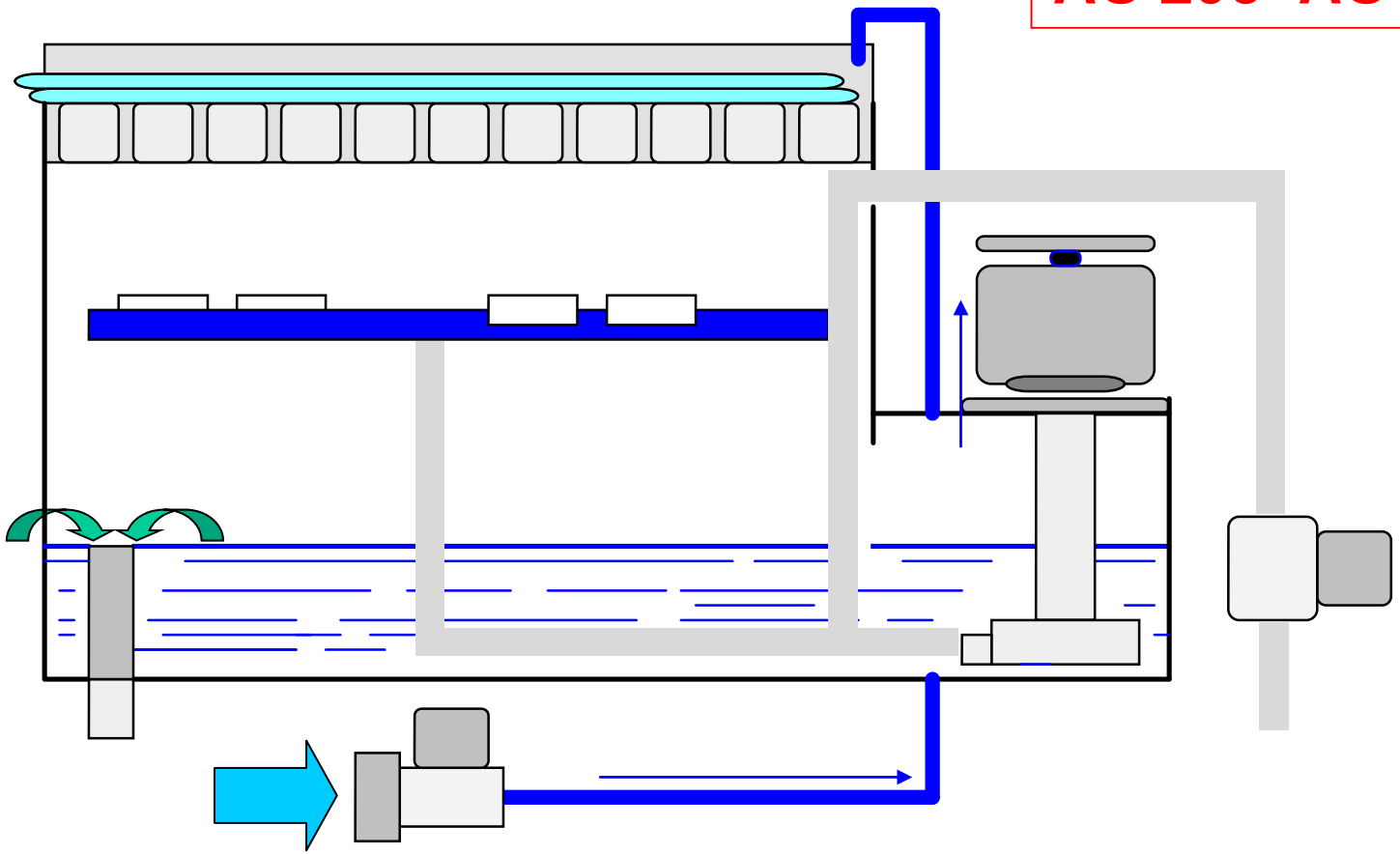
Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

AC 206- AC 226



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The components energized during this period are:

- **PC Board**

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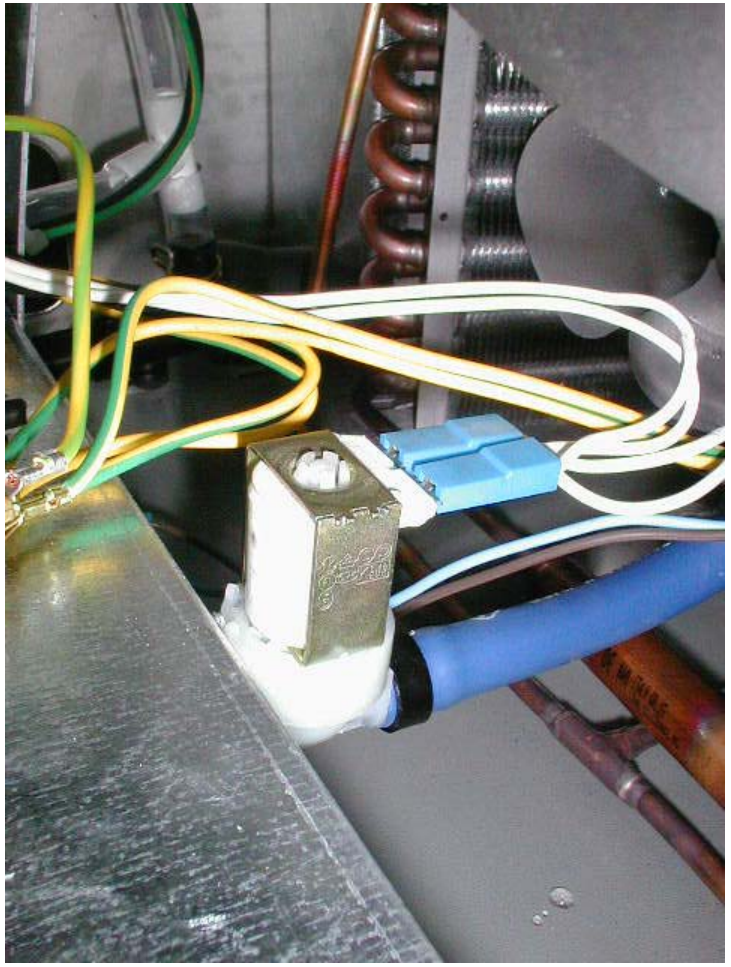
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Water Inlet Solenoid Valve**



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Water drain valve (not used on AC106)**

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Hot Gas Solenoid Valve**

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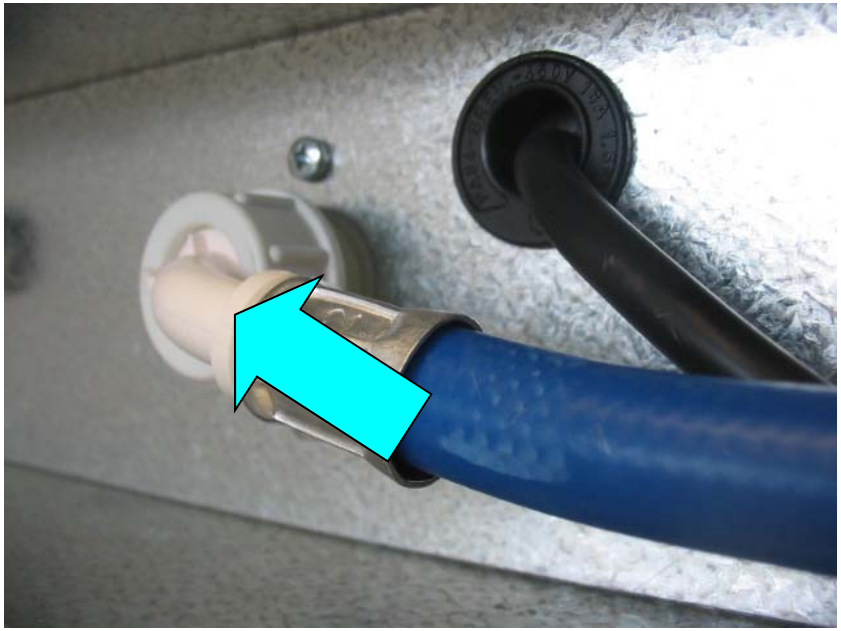
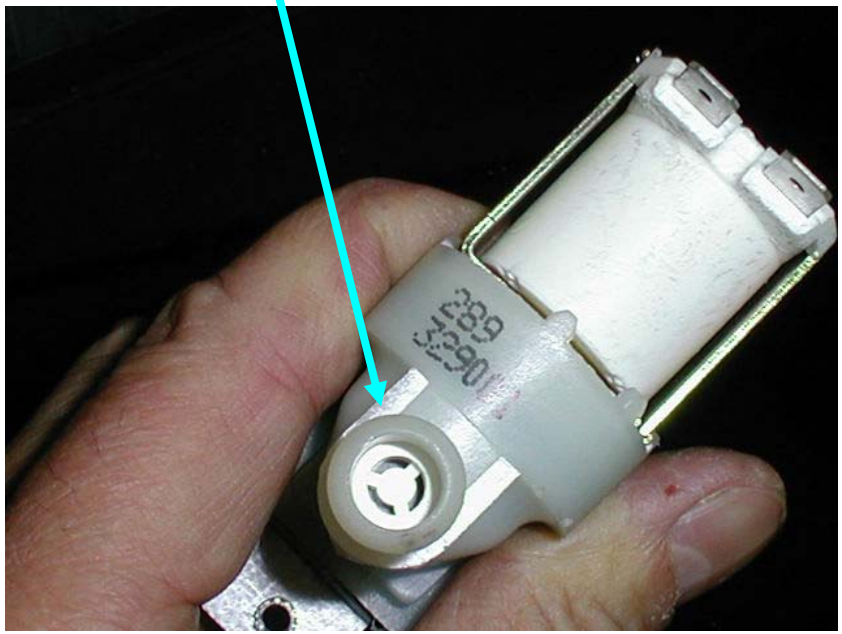
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

During the first 5’ the water goes through the Water Inlet Valve then…



….flows into the small orifice of the “Flow Control” located on the outlet port of the same.



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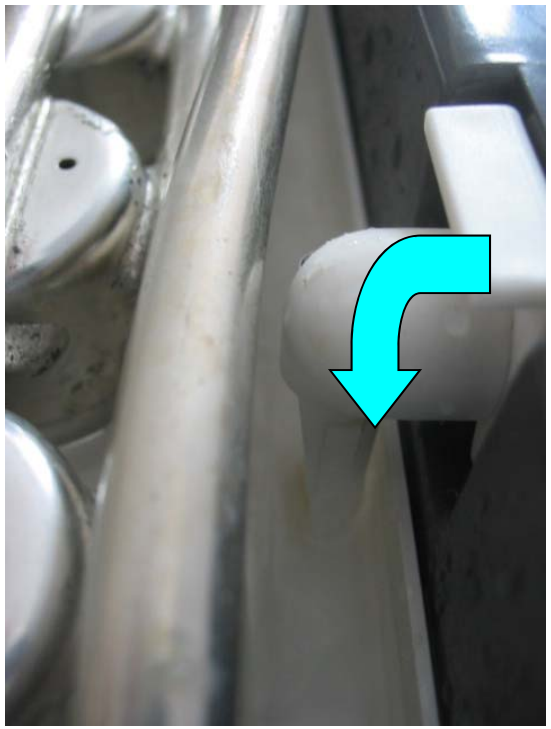
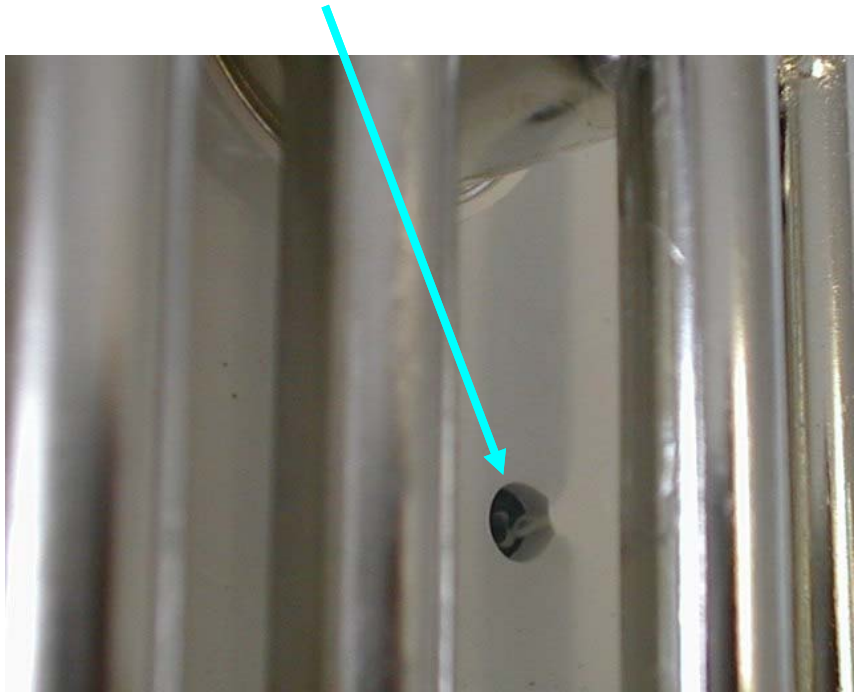
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Following the plastic inlet hose the incoming water arrive on the upper side of the evaporator….



.... where it flows onto the plastic evaporator platen dribbling down through the holes located on the corners.



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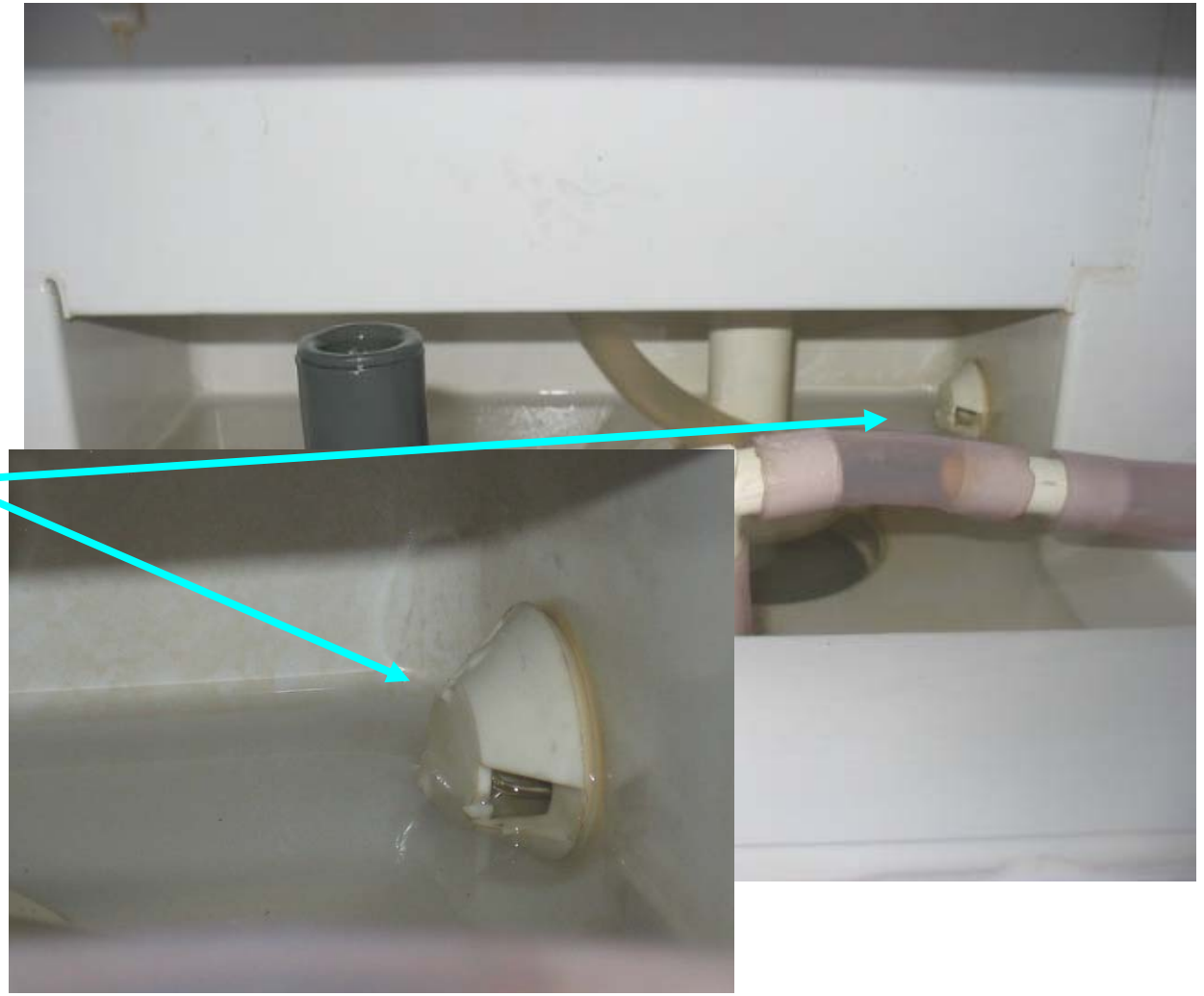
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Dribbled water is collected down into the water sump where is located the overflow that assures the proper water level and quantity for the next freezing cycle.



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

After the first 5’ of water filling phase the machine start up automatically on freezing cycle with the following electrical components in operation:

- **Compressor**

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Water Pump**

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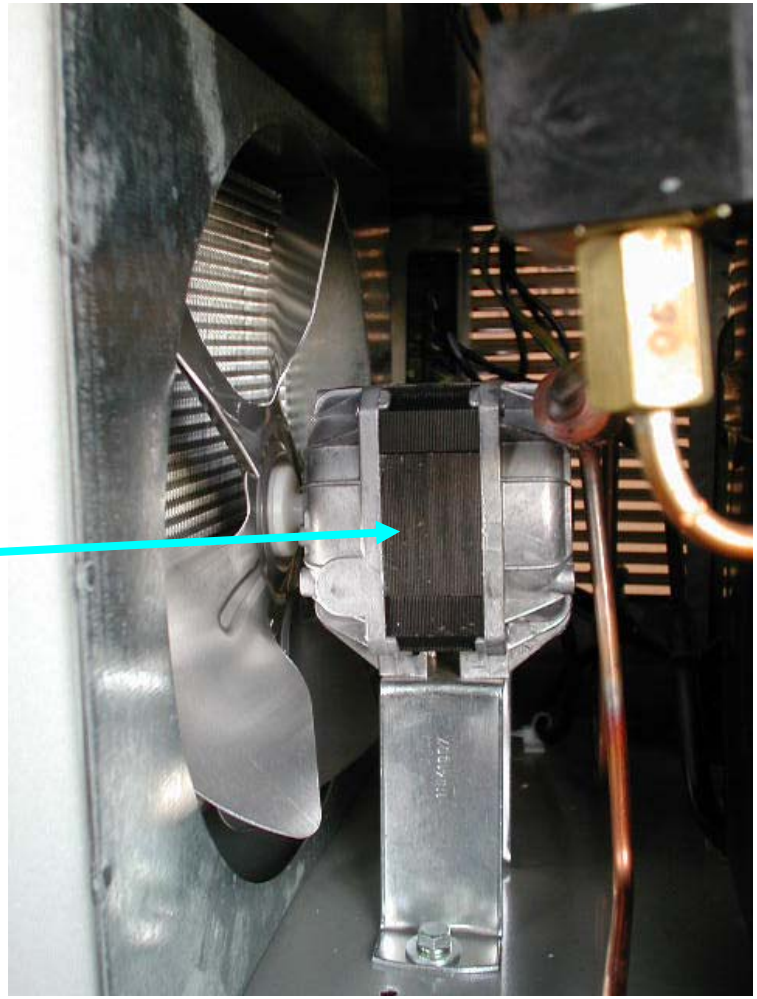
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Fan Motor (on air cooled version only)**



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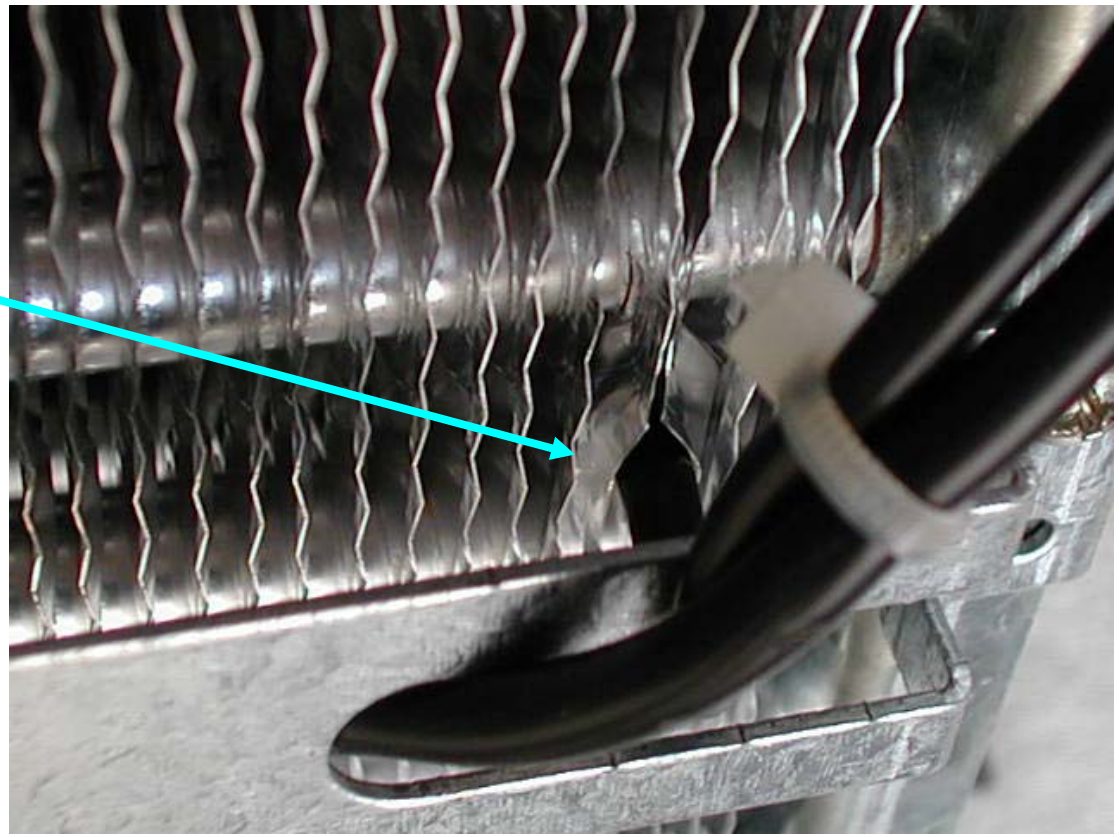
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The operation of the fan motor is controlled by a condenser temperature sensor located within the fins of condenser that transmit a signal to the PC Board to activate in ON-OFF mode the fan motor so to keep between two pre-set values the condenser temperature and pressure.



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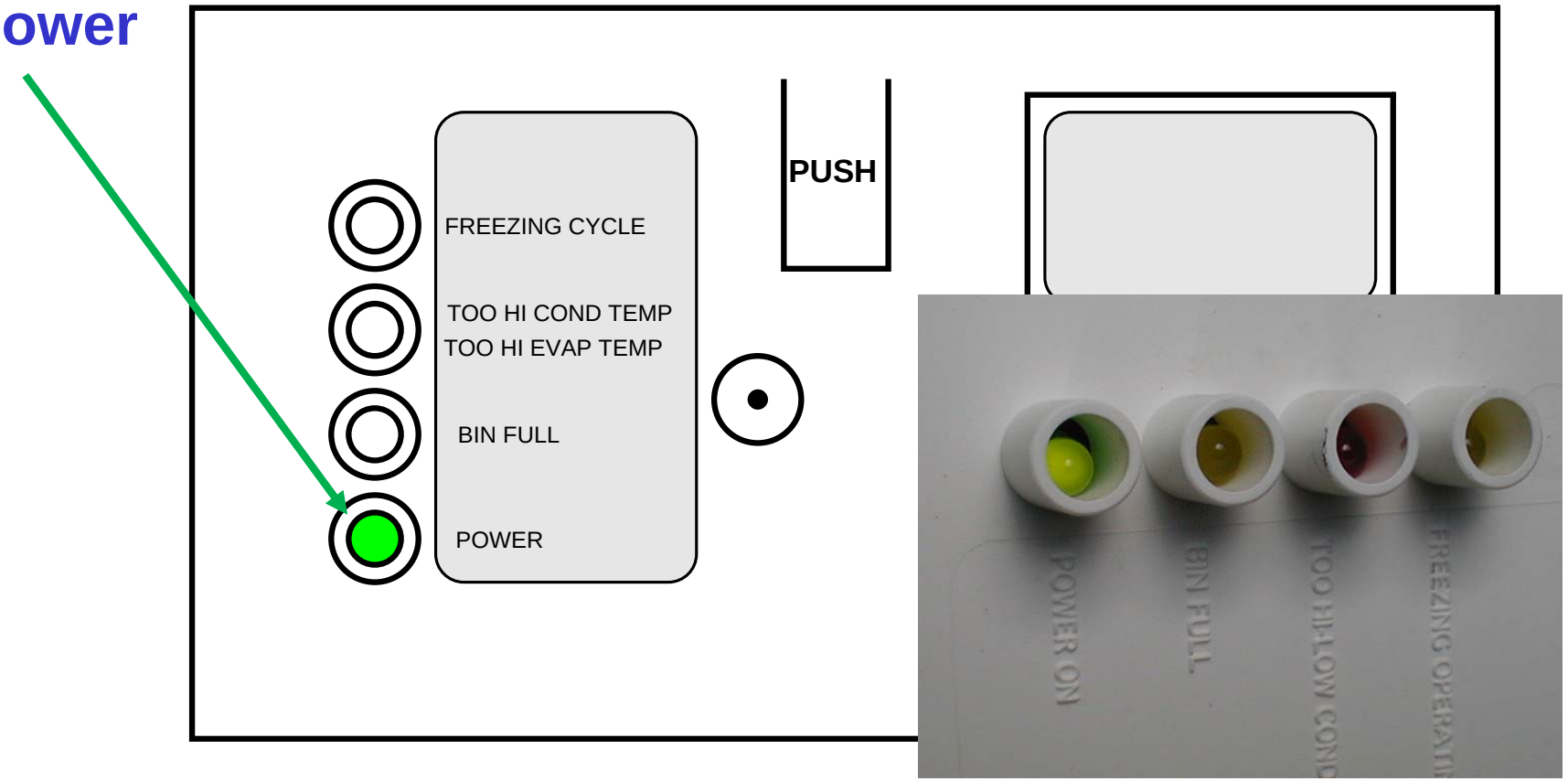
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

On PC Board the LED energized are:

- **Power**



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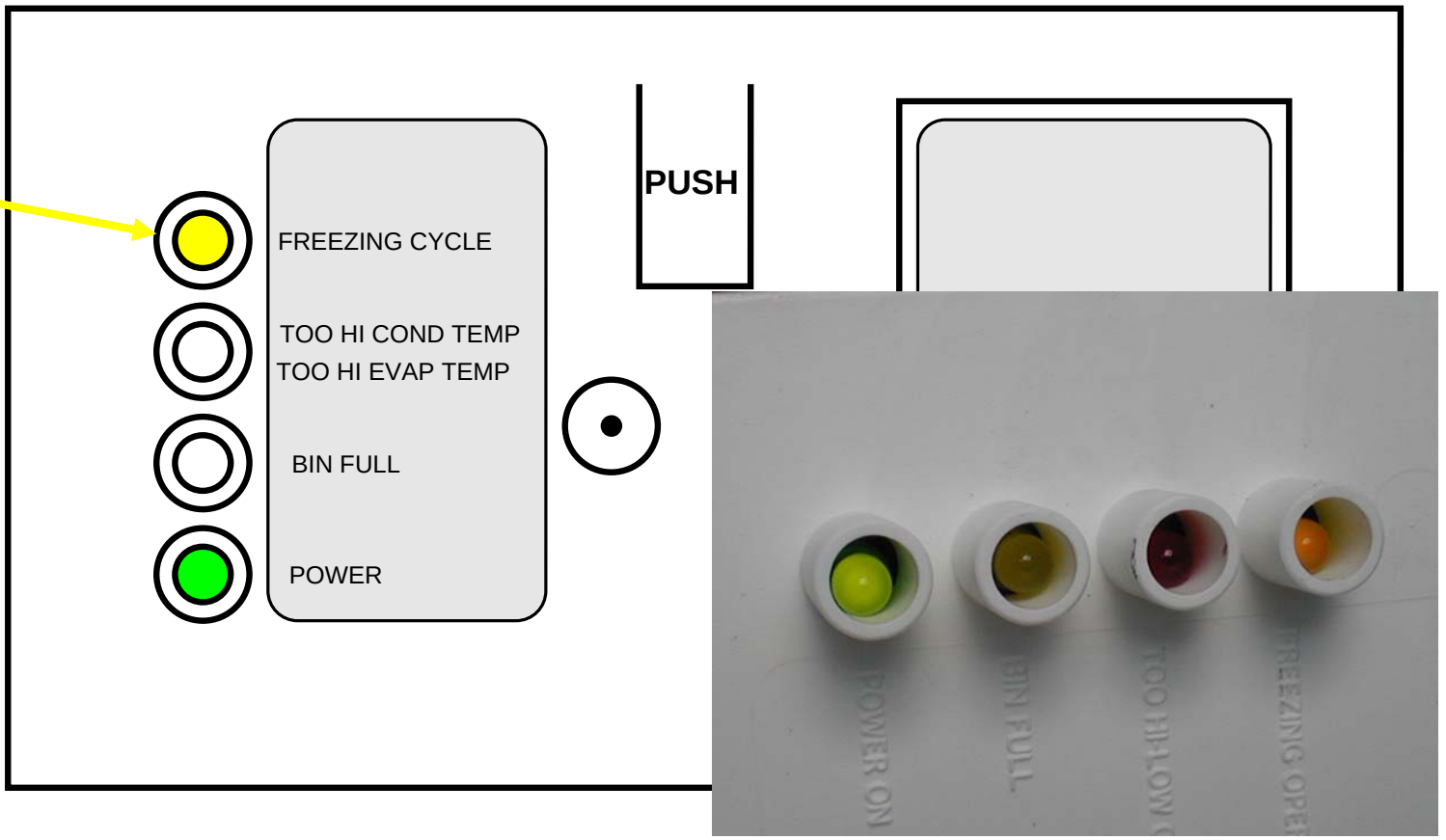
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

On PC Board the LED energized are:

- Power
- **Freezing**



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Water is circulating by the water pump into the inverted tin plated copper molds of the evaporator….

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

….while the refrigerant is flowing into the serpentine welded on the upper side of the tin plated copper molds.

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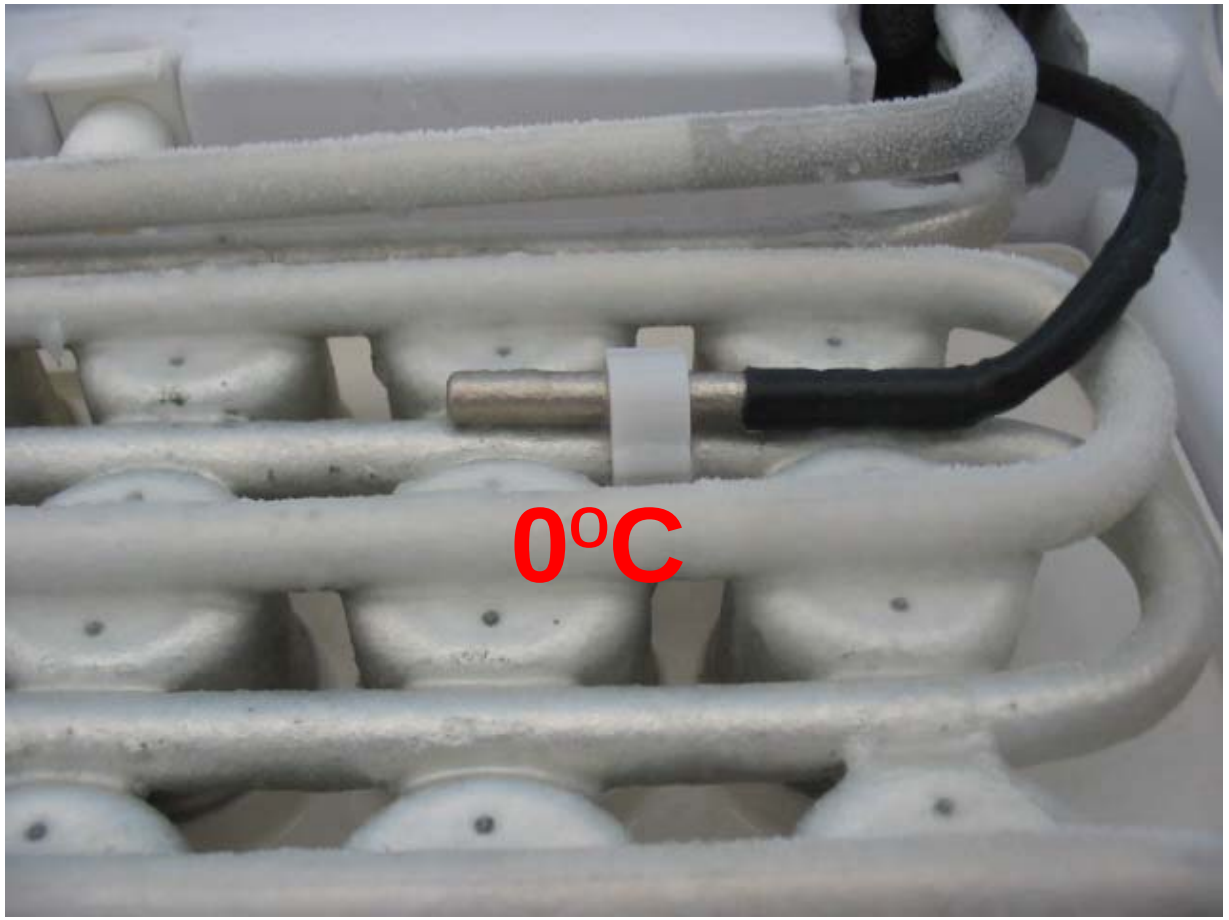
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

After approximately 5 minutes since the start up of the freezing cycle, the temperature of the evaporator serpentine drops down to 0ºC….



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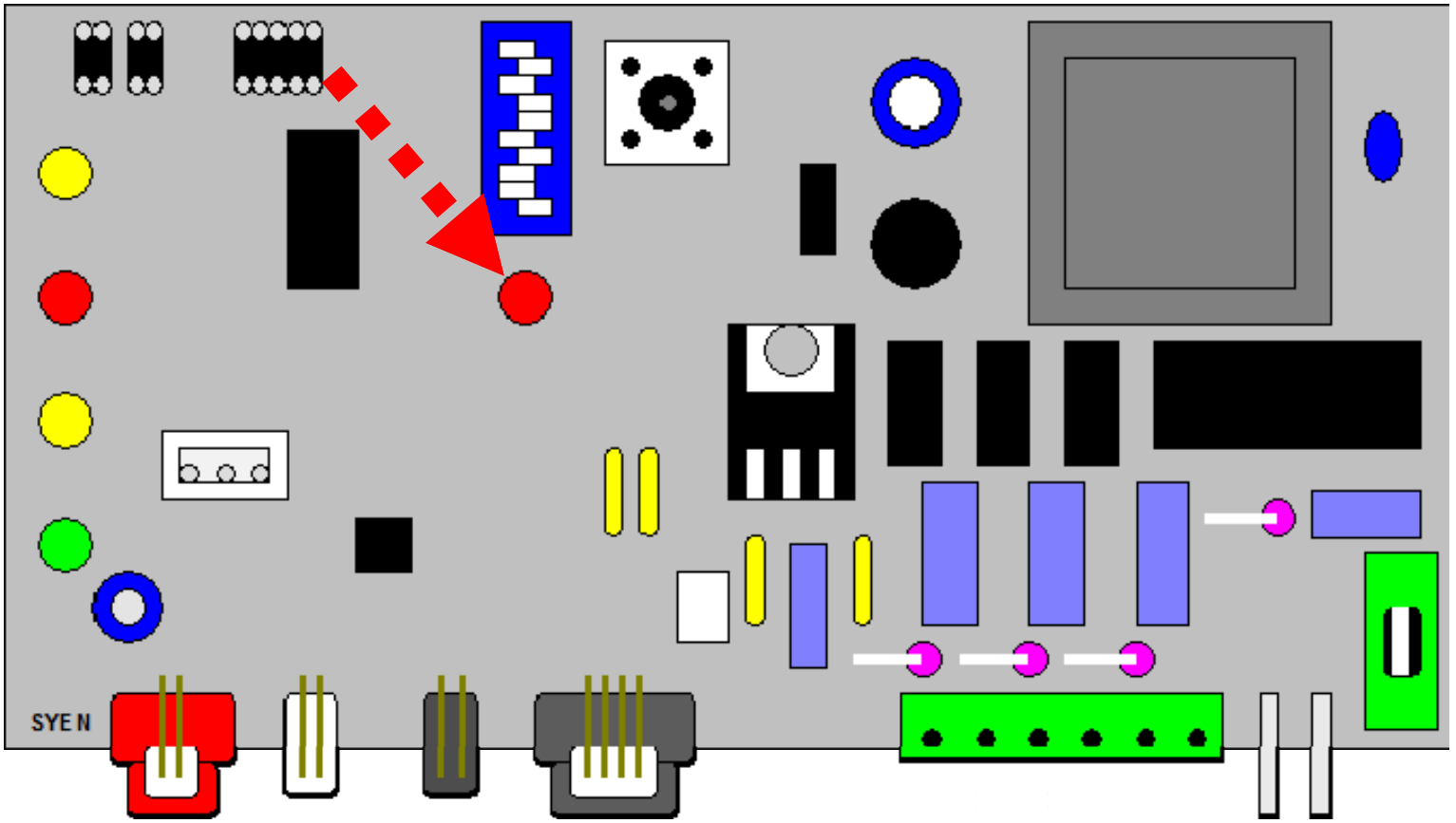
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

….with the blinking of the small RED LED located in the center of PC Board.



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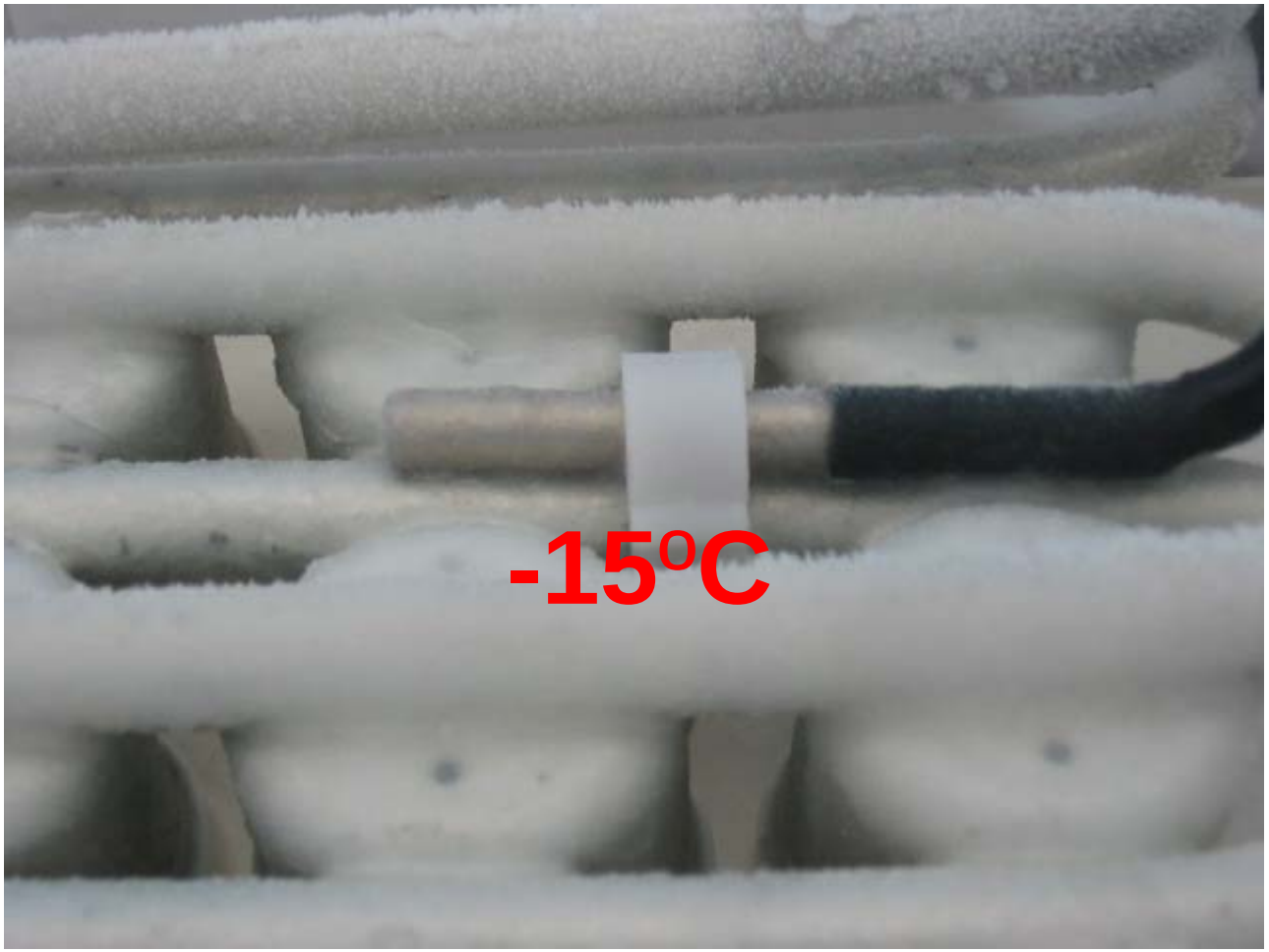
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

After approximately 10 minutes from the start up of the freezing cycle, the temperature of the evaporator serpentine drops down to - 15ºC….



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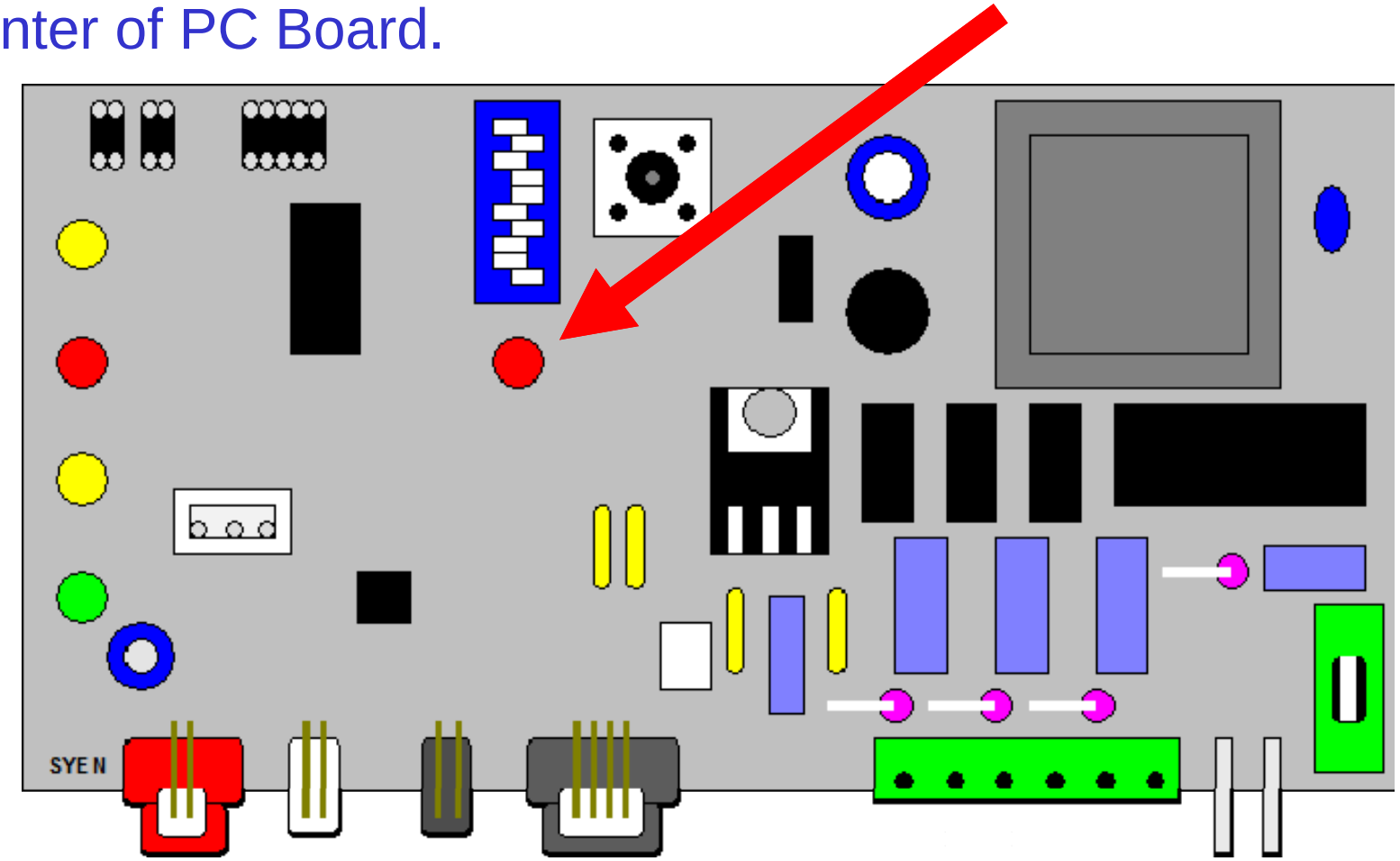
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

….with the light ON steady of the small RED LED located in the center of PC Board.



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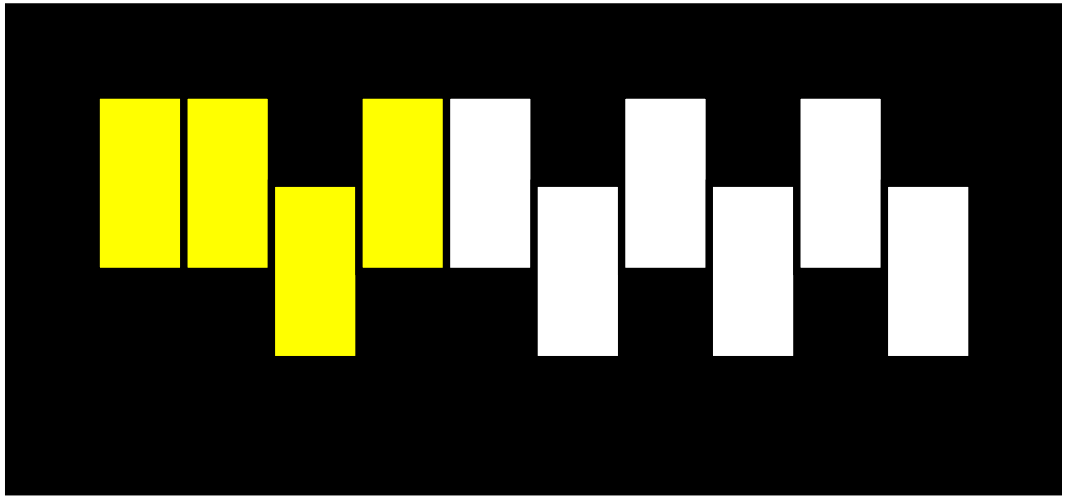
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The machine remains in the freezing cycle till its completion for an additional time according to the set up of the first four DIP SWITCH of the PC Board.



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Once completed the freezing cycle the machine enters into the defrost or harvest cycle with the following electrical components in operation:

- **Compressor**

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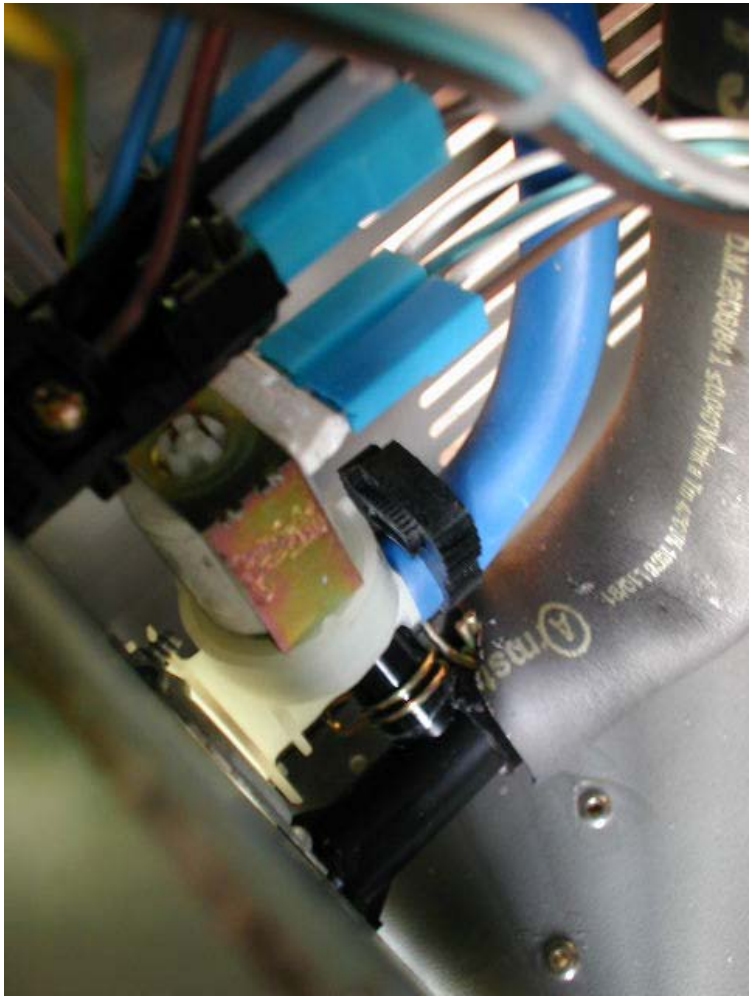
START UP AND OPERATIONAL CHECKS

- **Water Inlet Solenoid valve**



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Water Drain/Purge Solenoid Valve**
  (Not Used on AC 106)

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

- **Hot Gas Valve**

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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

According to the setting of the DIP SWITCH no 9 the Water Pump can remain in operation to discharge the water not used on the previous freezing cycle during the first....

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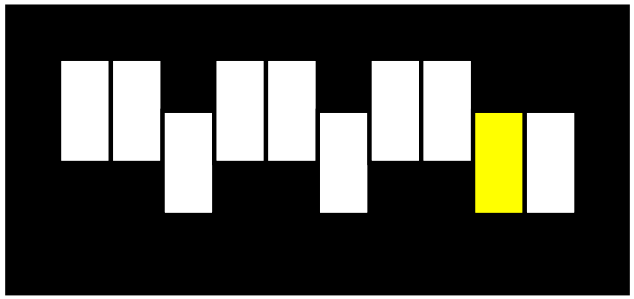
START UP AND OPERATIONAL CHECKS

….15” of the harvest cycle, when the DIP SWITCH is in OFF position, or 30” when in ON position.

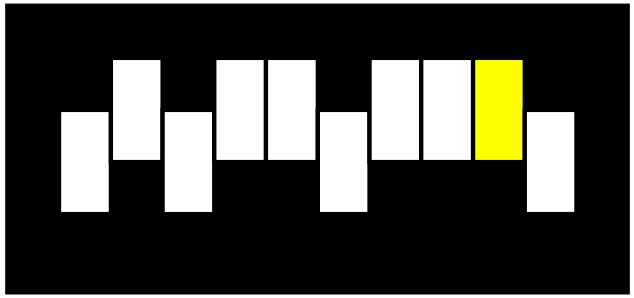
OFF = 15 seconds

ON = 30 seconds

AC 126-176



AC 206-226



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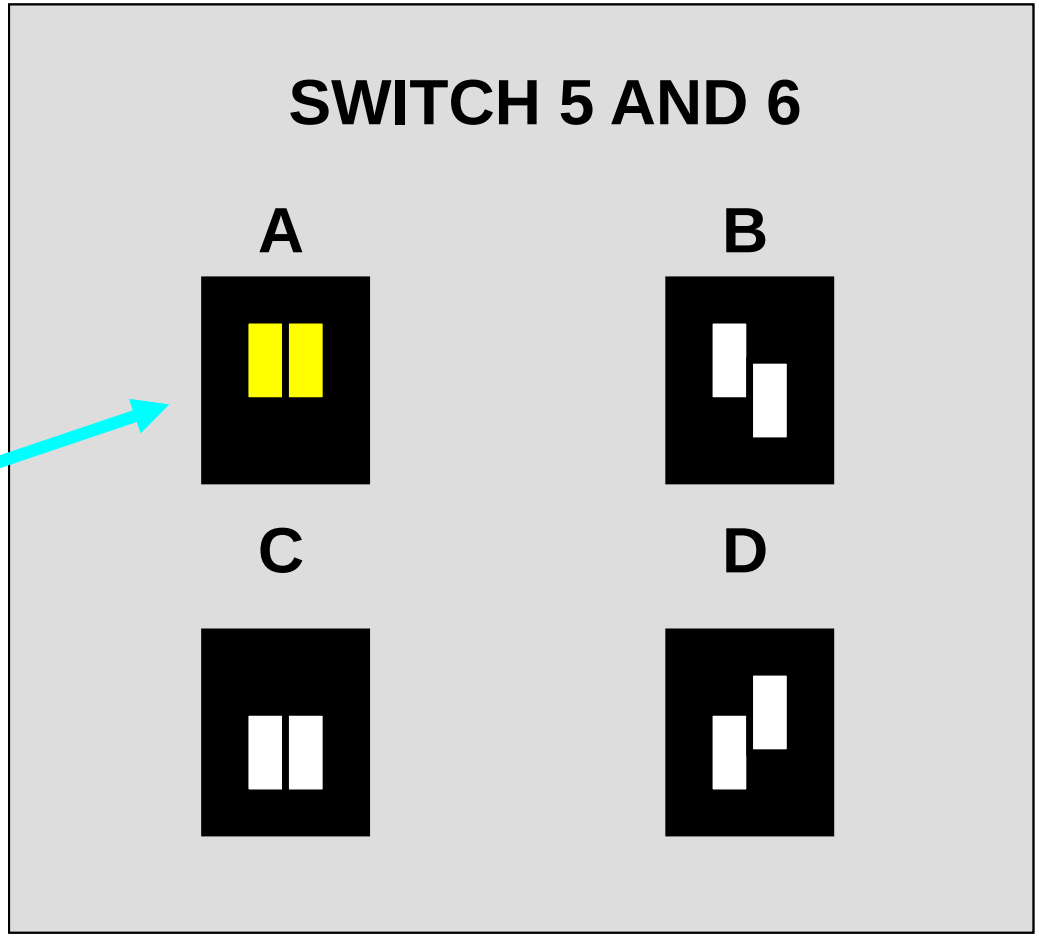
NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The length of the defrost or harvest cycle is controlled by the PC Board according to the setting of the DIP SWITCH 5 and 6 and it is related to …..



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NEW AC SERIES

START UP AND OPERATIONAL CHECKS

…..the time that the machine takes to drop the evaporating temperature from 0ºC to -15ºC (**time T_2**) as shown on the table.

LENGTH OF HARVEST CYCLE ACCORDING TO THE TIME TO DROP THE EVAP. TEMPERATURE FROM 0ºC TO -13ºC

LENGTH HARVEST CYCLE	PROGRAMS A	B	C	D
180”	Up to 6’	***	Up to 9’	***
165”	6’-7’	Up to 3’	9’-10’	***
150”	7’-8’	3’-3’15’	10’-11’	***
135”	8’-9’	3’15”-3’30”	11’-12’	***
120”	9’-10’	3’30”-4’30”	12’-13’	Up to 3’
105”	10’-12’	430”-6’	13’-15’	3-4’
90”	>12’	>6’	>15’	>4’

Scotsman Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

It’s possible to extend the length of the defrost cycle by means of the DIP SWITCH 7 and 8 as per below chart.

DIP SWITCH		ADDITIONAL DEFROST TIME
7	**8**	
ON	ON	0
OFF	ON	30"
ON	OFF	60"
OFF	OFF	**WATER PUMP OFF**

Scotsman® Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

During the defrost or harvest cycle the combined action of refrigerant in Hot Gas state and incoming Water are going to partially melt the ice cubes in contact with the tin plated copper molts with the dropping down of the same through the curtain.

Scotsman® Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

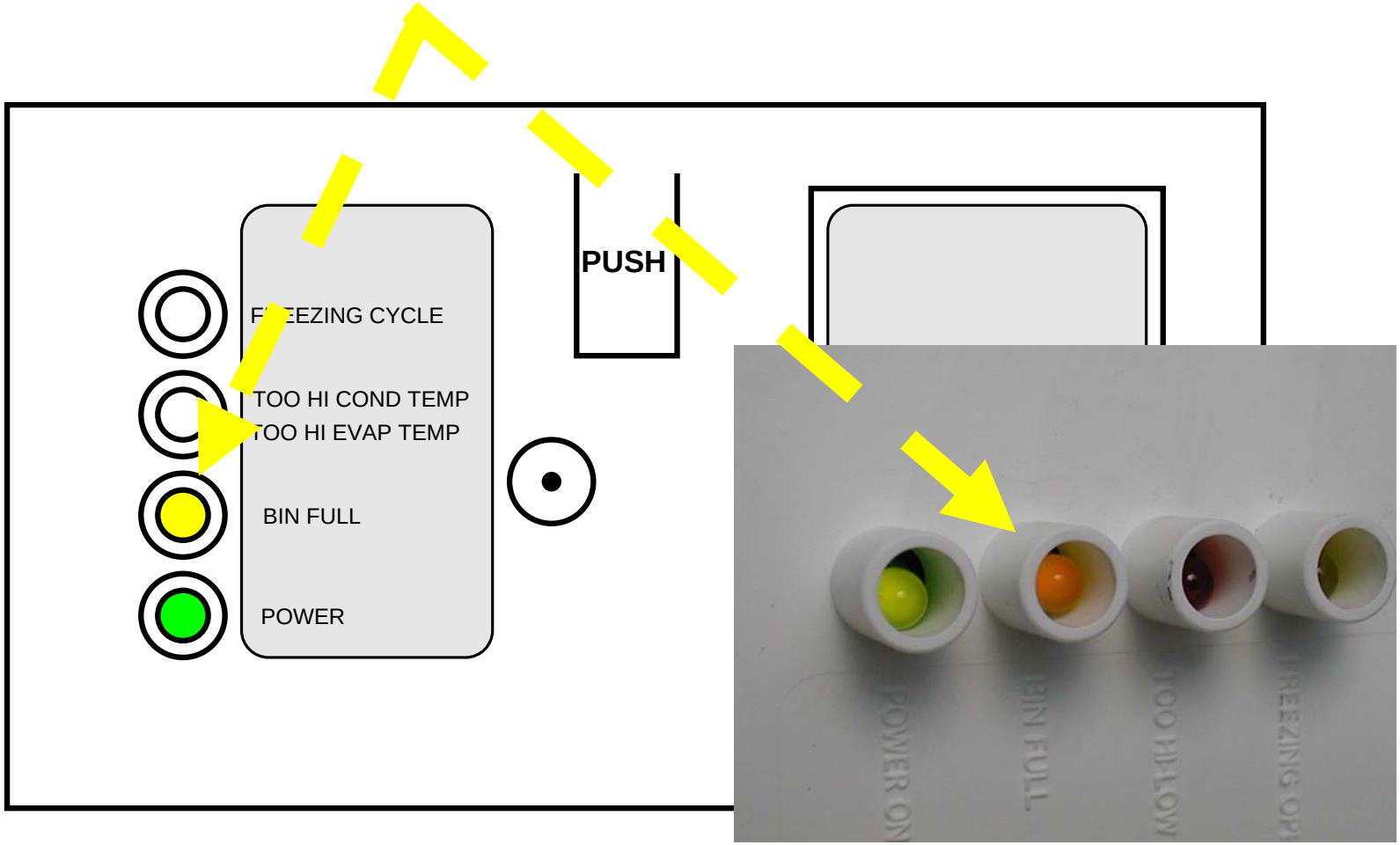
With some ice cubes between the I/R Optical Ice Level Sensor during the defrost cycle it is possible to test its operation.

Scotsman Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

The Bin Full YELLOW LED starts to blink slow.

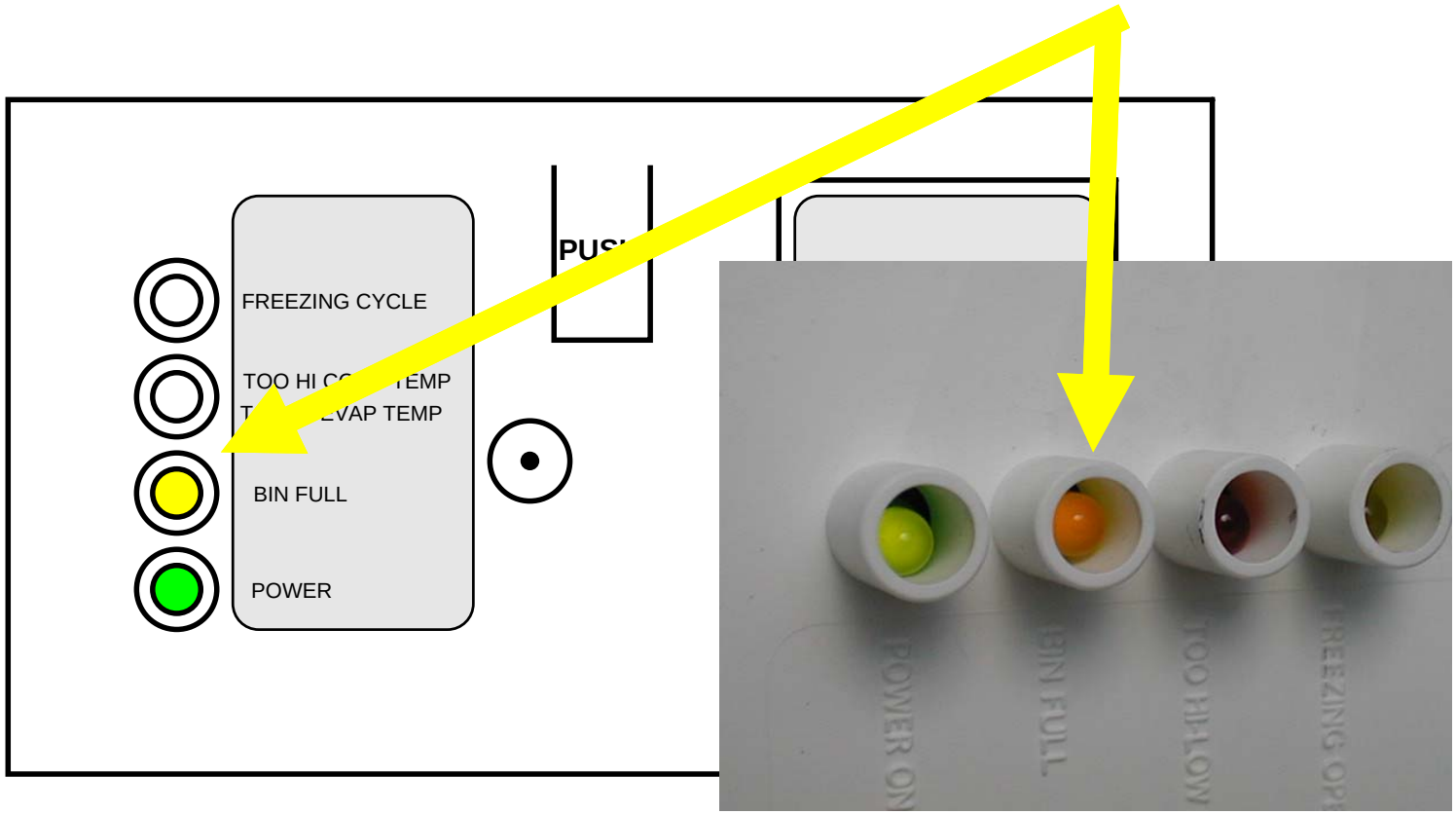


Scotsman Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

Till the end of the next freezing cycle in order to release full ice cubes at every time; after that the machine will stop at bin full condition with the yellow LED steady ON

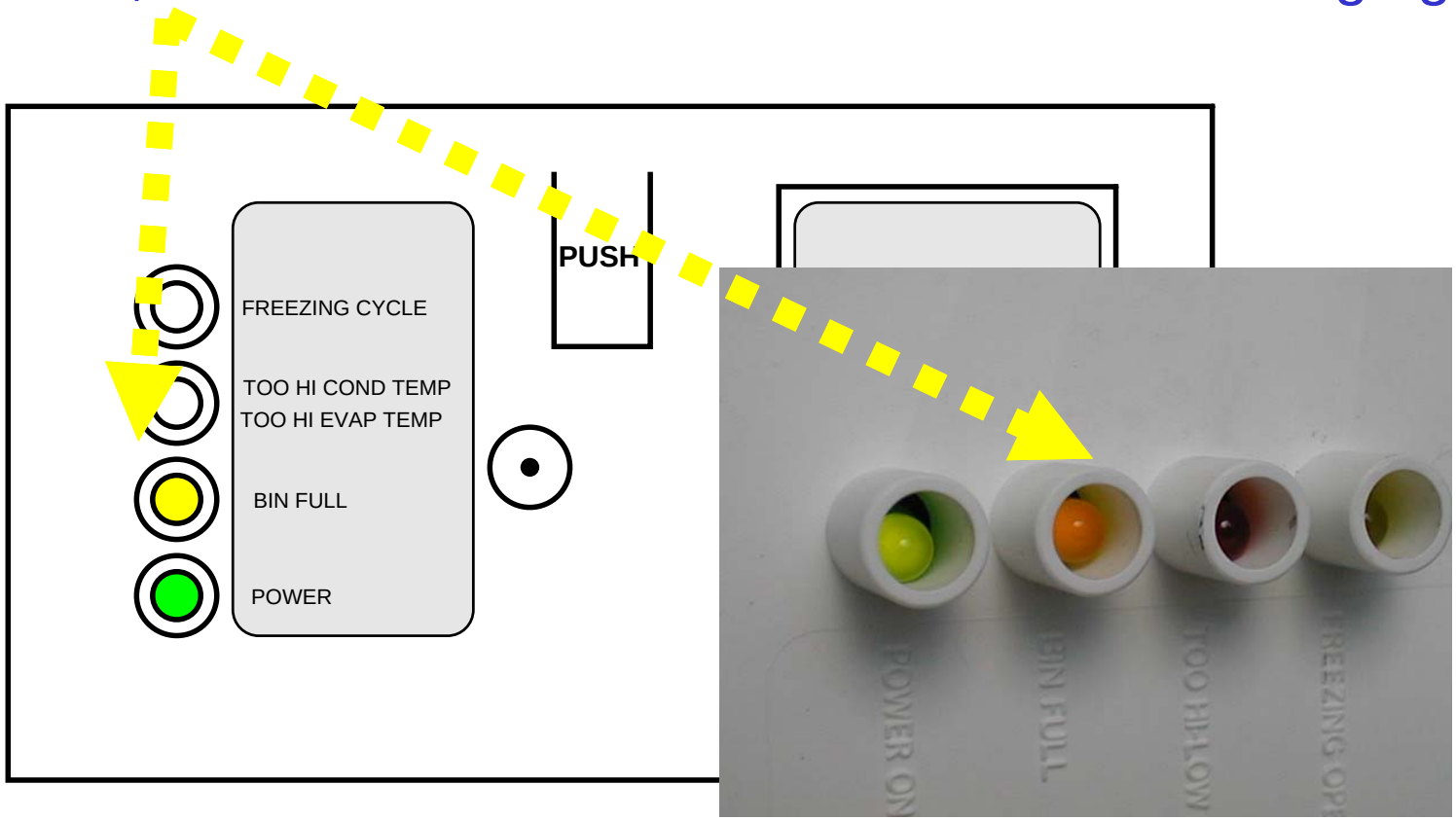


Scotsman Ice Systems

NEW AC SERIES

START UP AND OPERATIONAL CHECKS

As soon as the ice is removed between transmitter and received the infrared beam is resumed immediately with fast a blinking of the Yellow LED, then the machine restart with 45” of recharging water



Scotsman®
Ice Systems

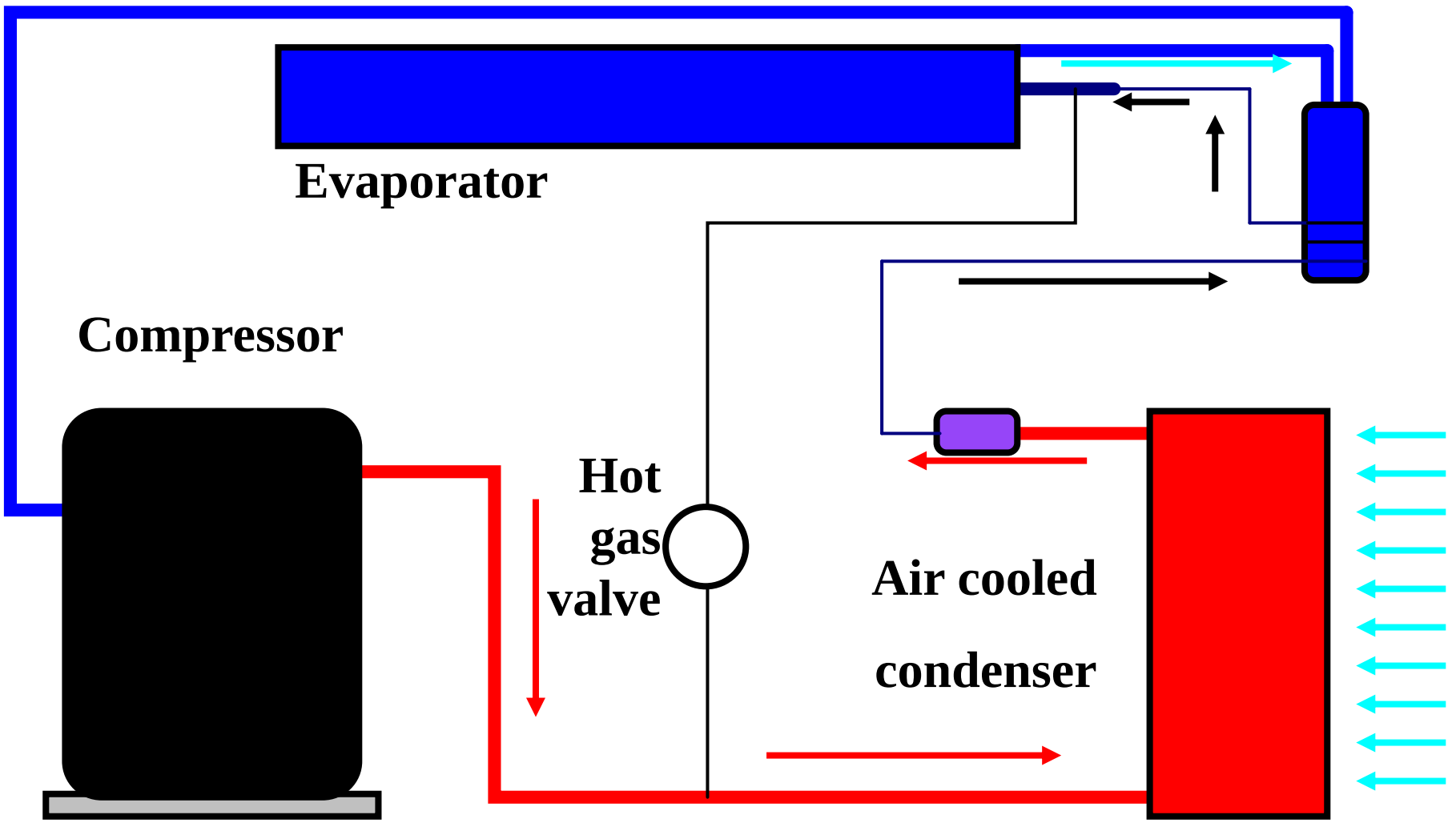
NEW AC SERIES

OPERATING PRINCIPLES and COMPONENTS

Scotsman®
Ice Systems

NEW AC SERIES

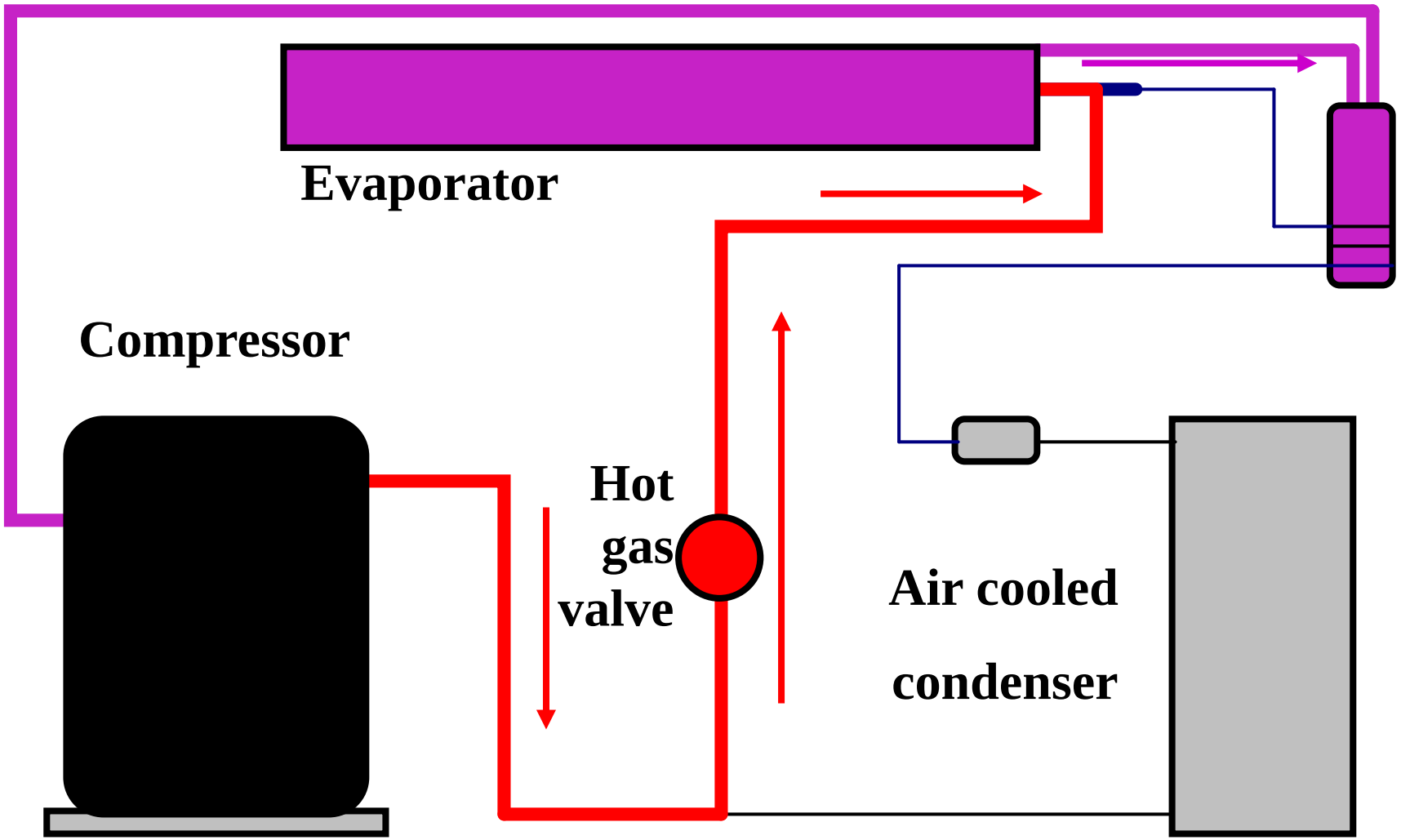
OPERATING PRINCIPLES - FREEZE



Scotsman®
Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES - HARVEST

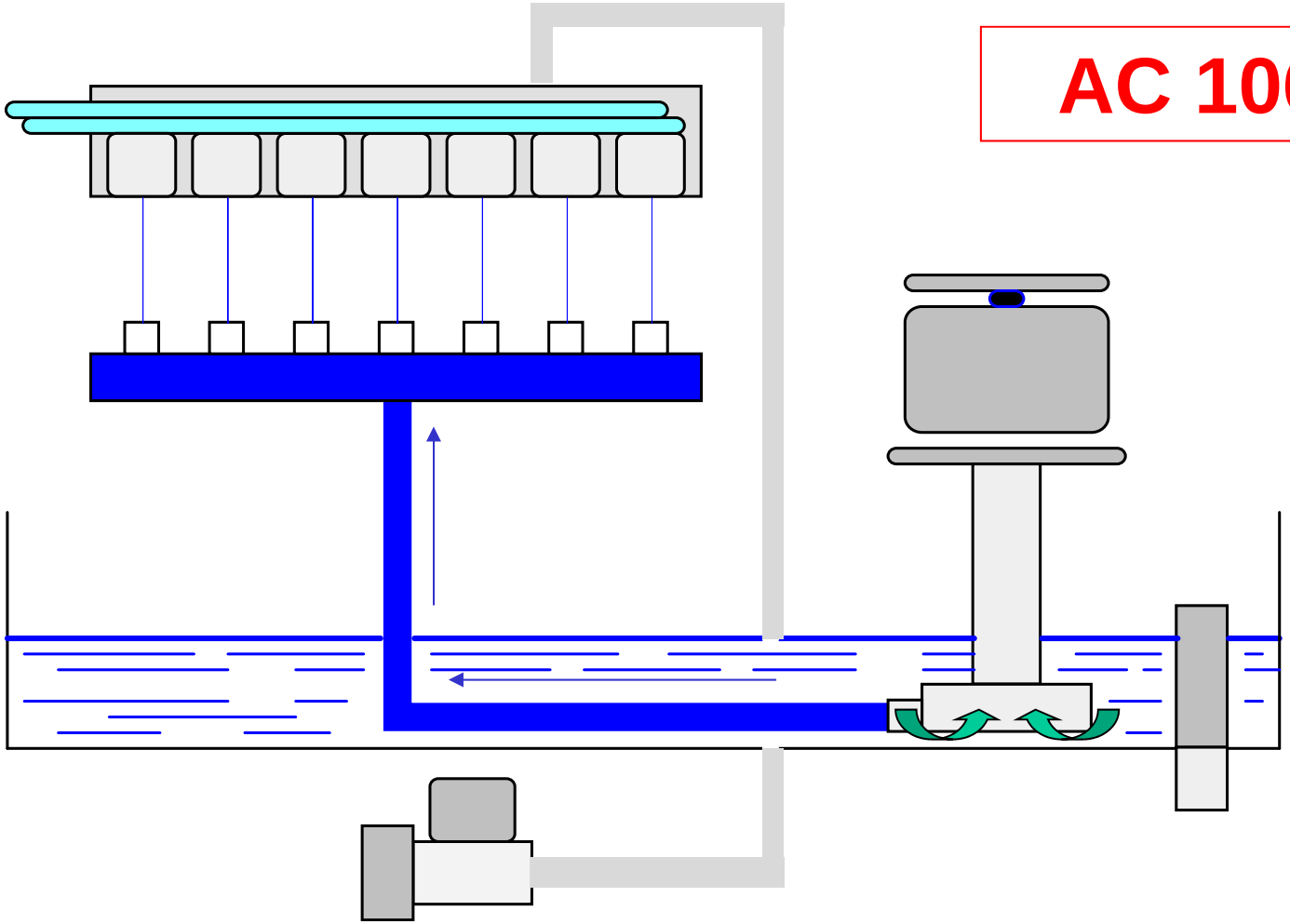


Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – FREEZING CYCLE

AC 106

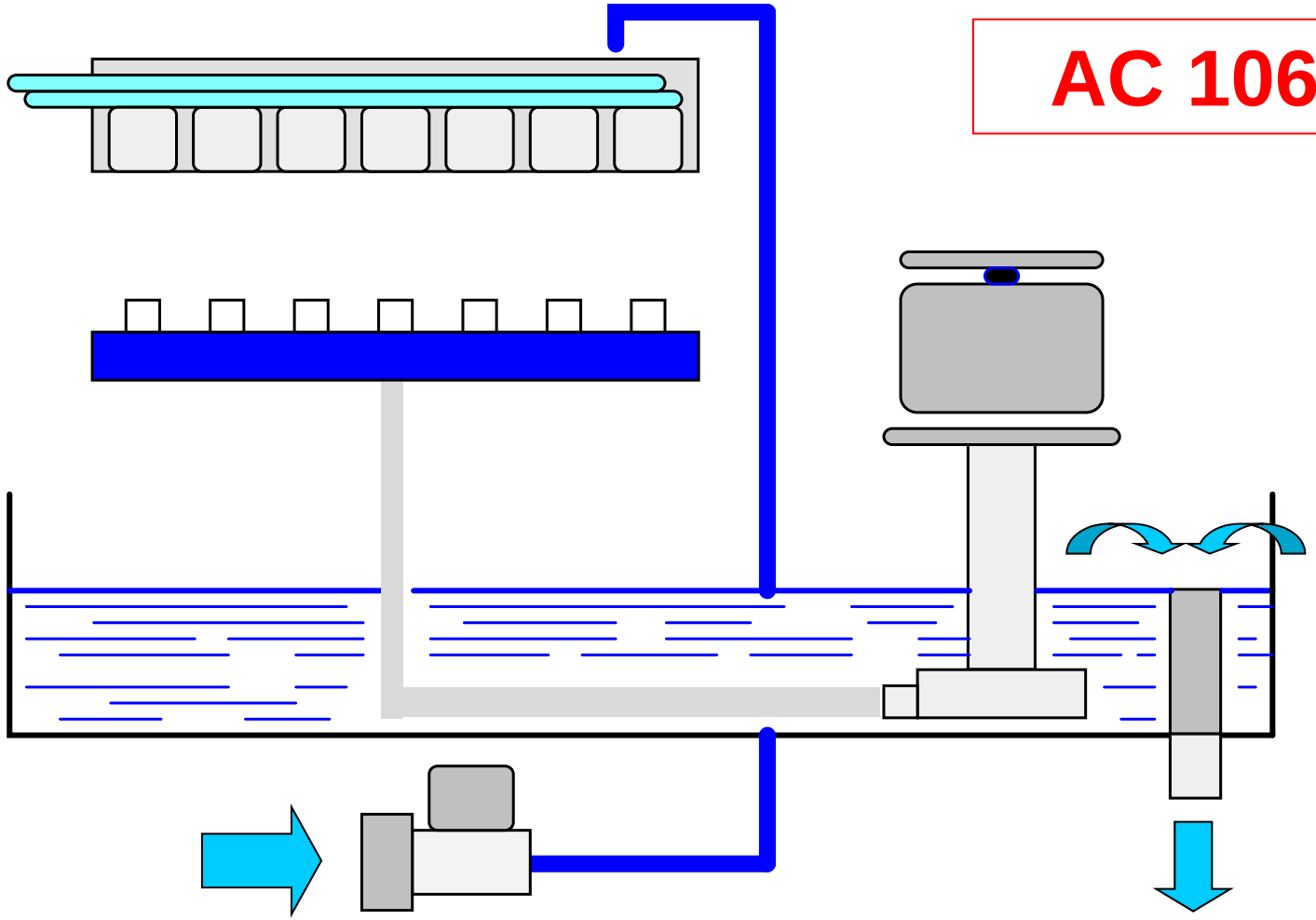


Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – HARVEST CYCLE

AC 106

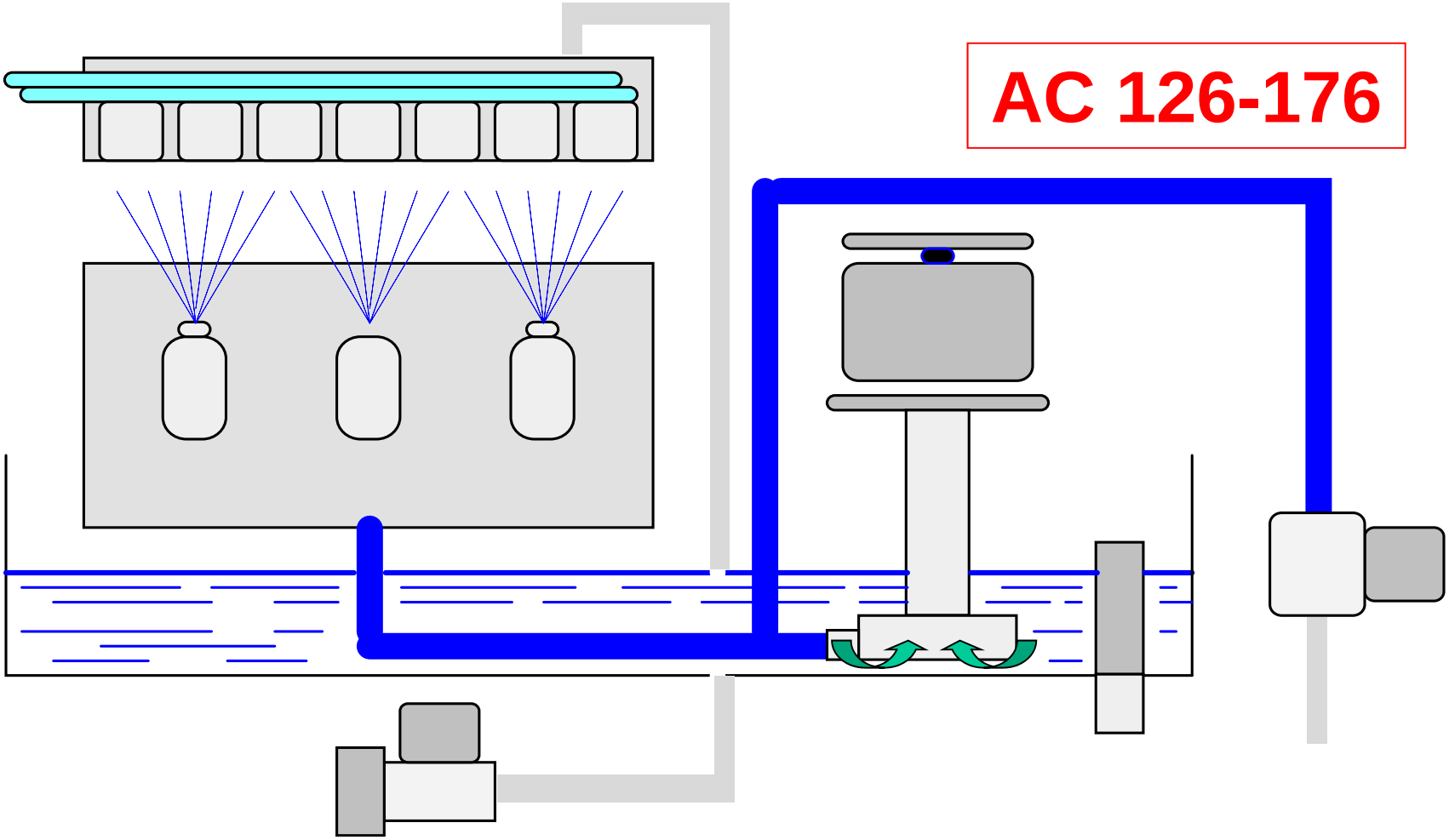


Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – FREEZING CYCLE

AC 126-176



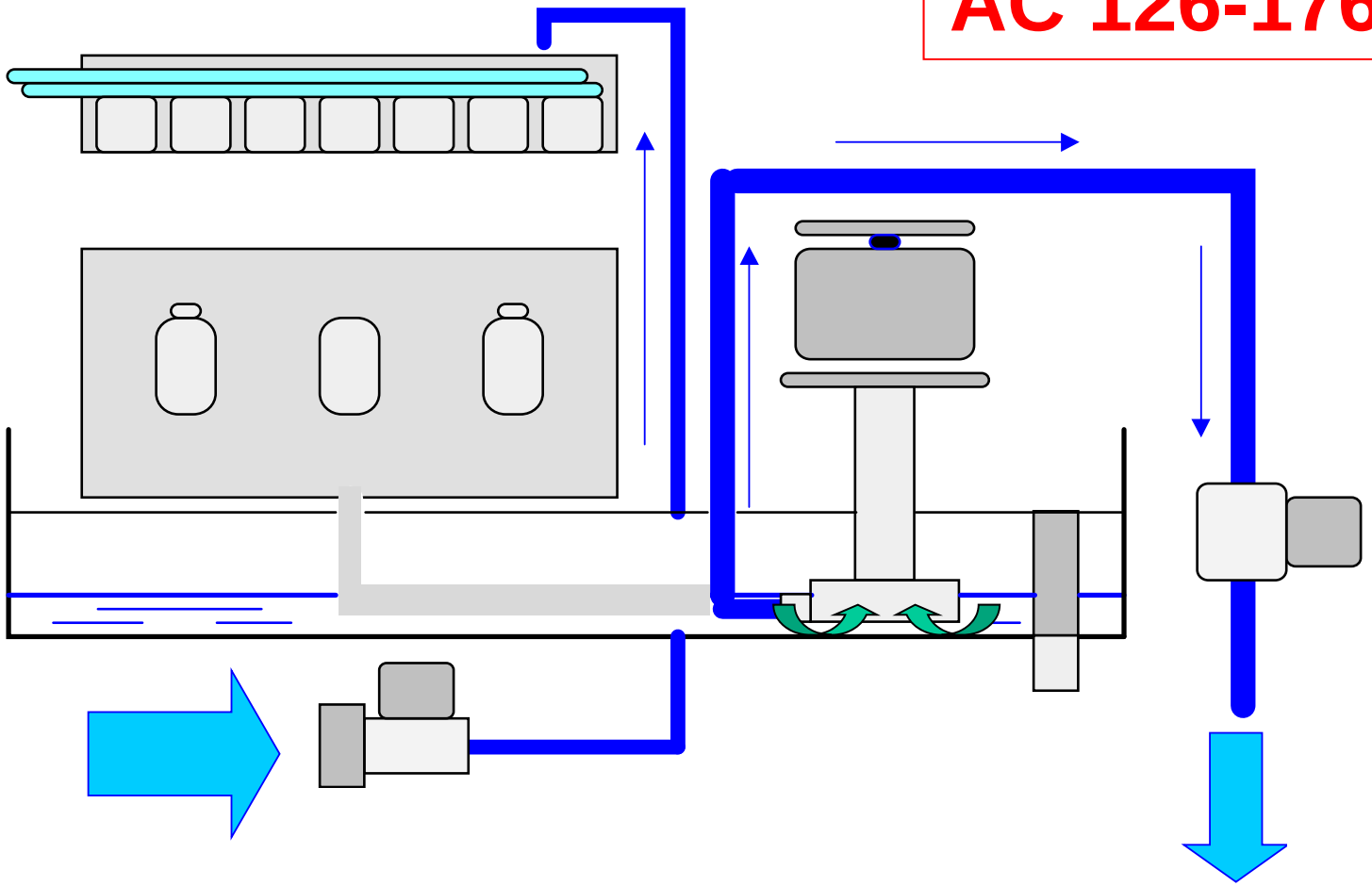
Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – HARVEST CYCLE

FIRST PORTION 15”

AC 126-176



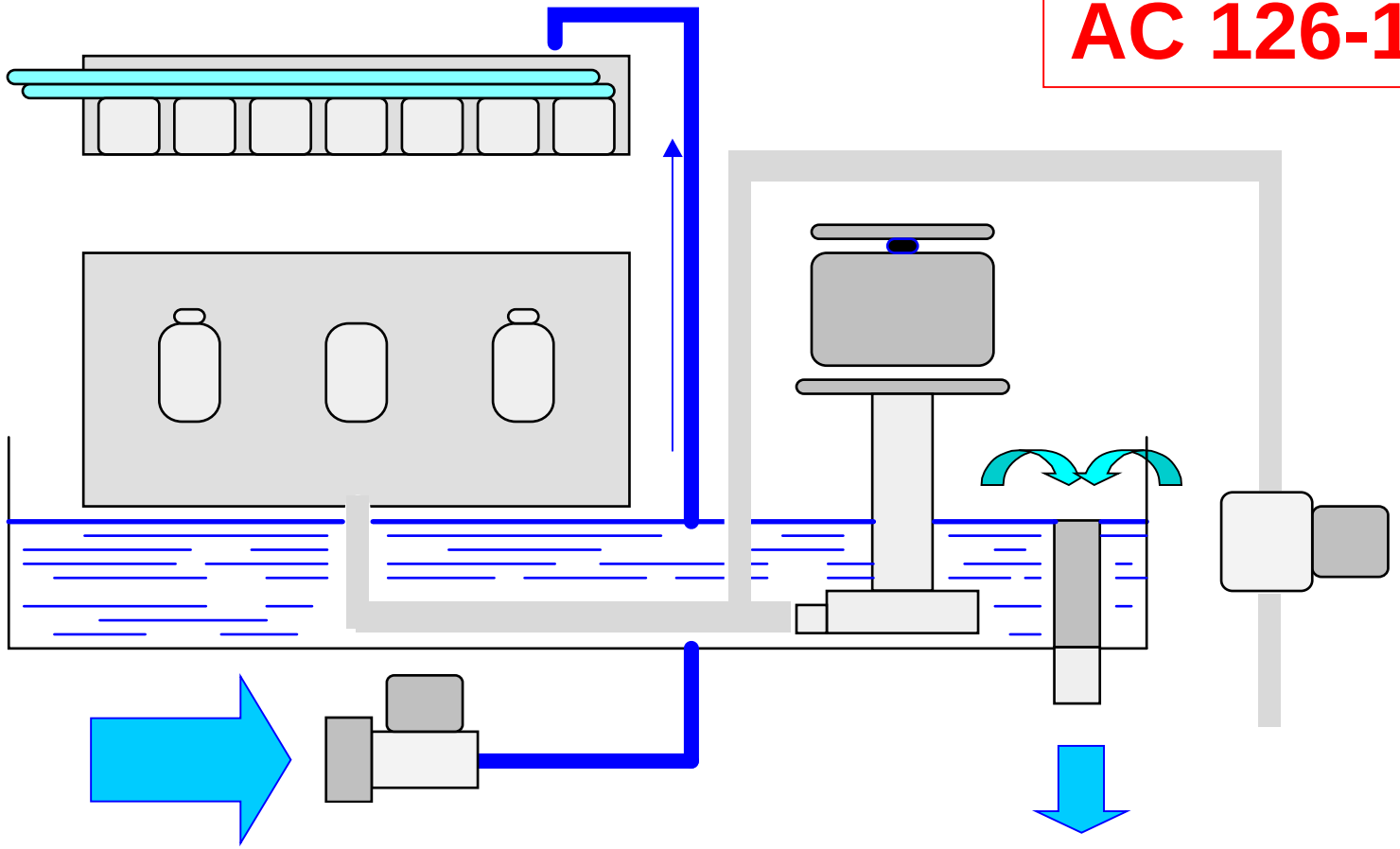
Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – HARVEST CYCLE

SECOND PORTION

AC 126-176

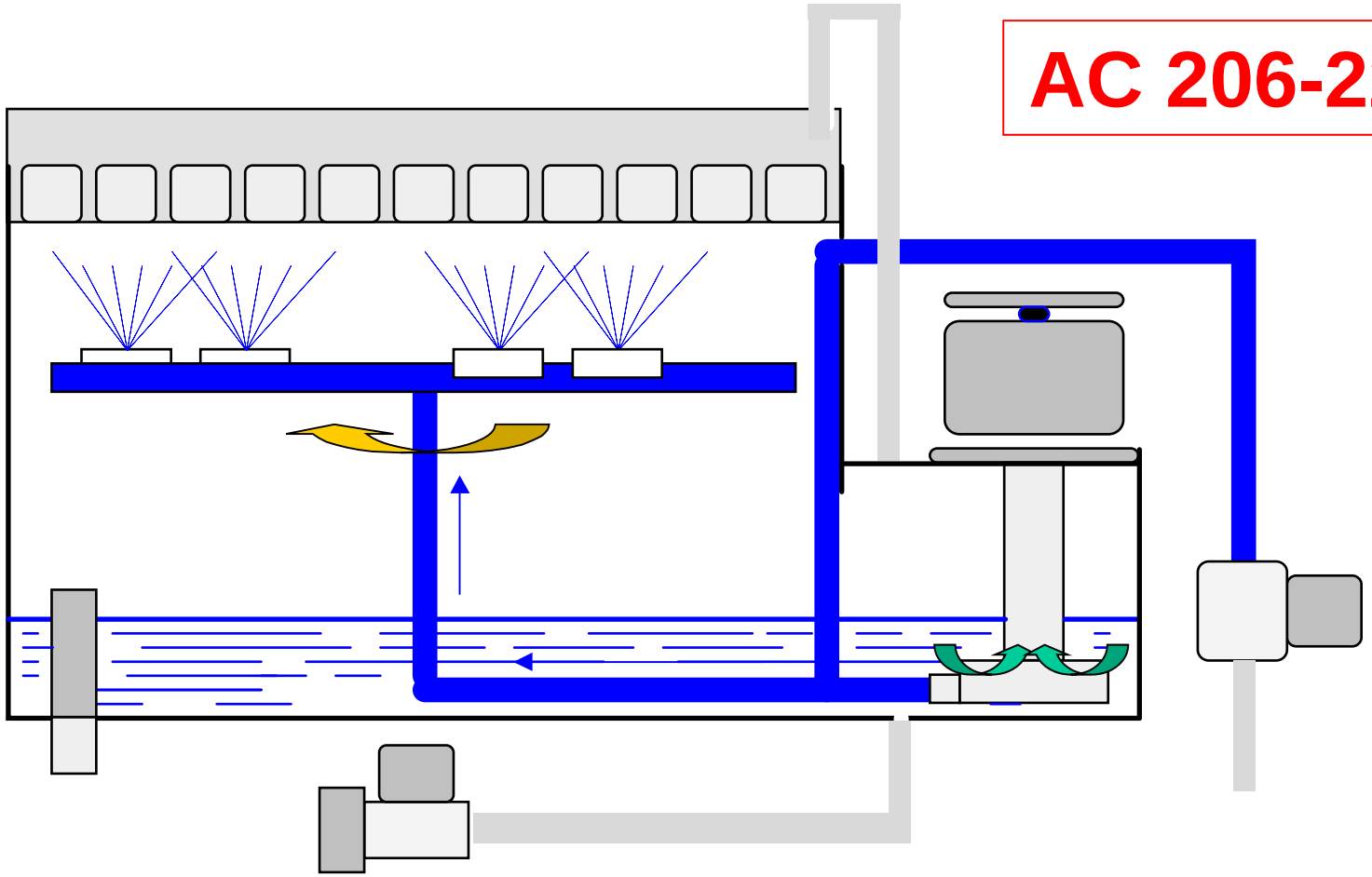


Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – FREEZING CYCLE

AC 206-226



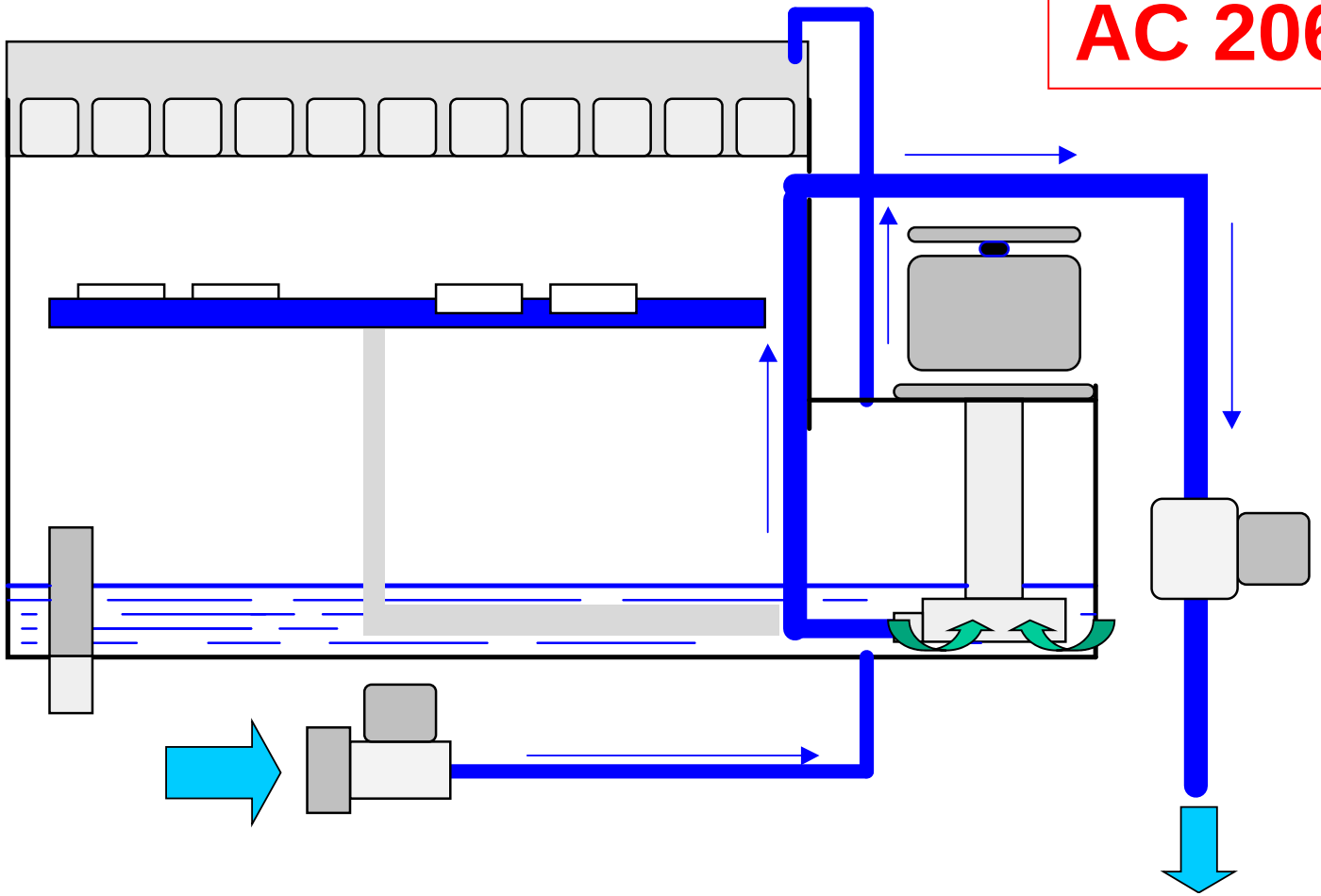
Scotsman Ice Systems

NEW AC SERIES

WATER SYSTEM – HARVEST CYCLE

FIRST PORTION 30”

AC 206-226



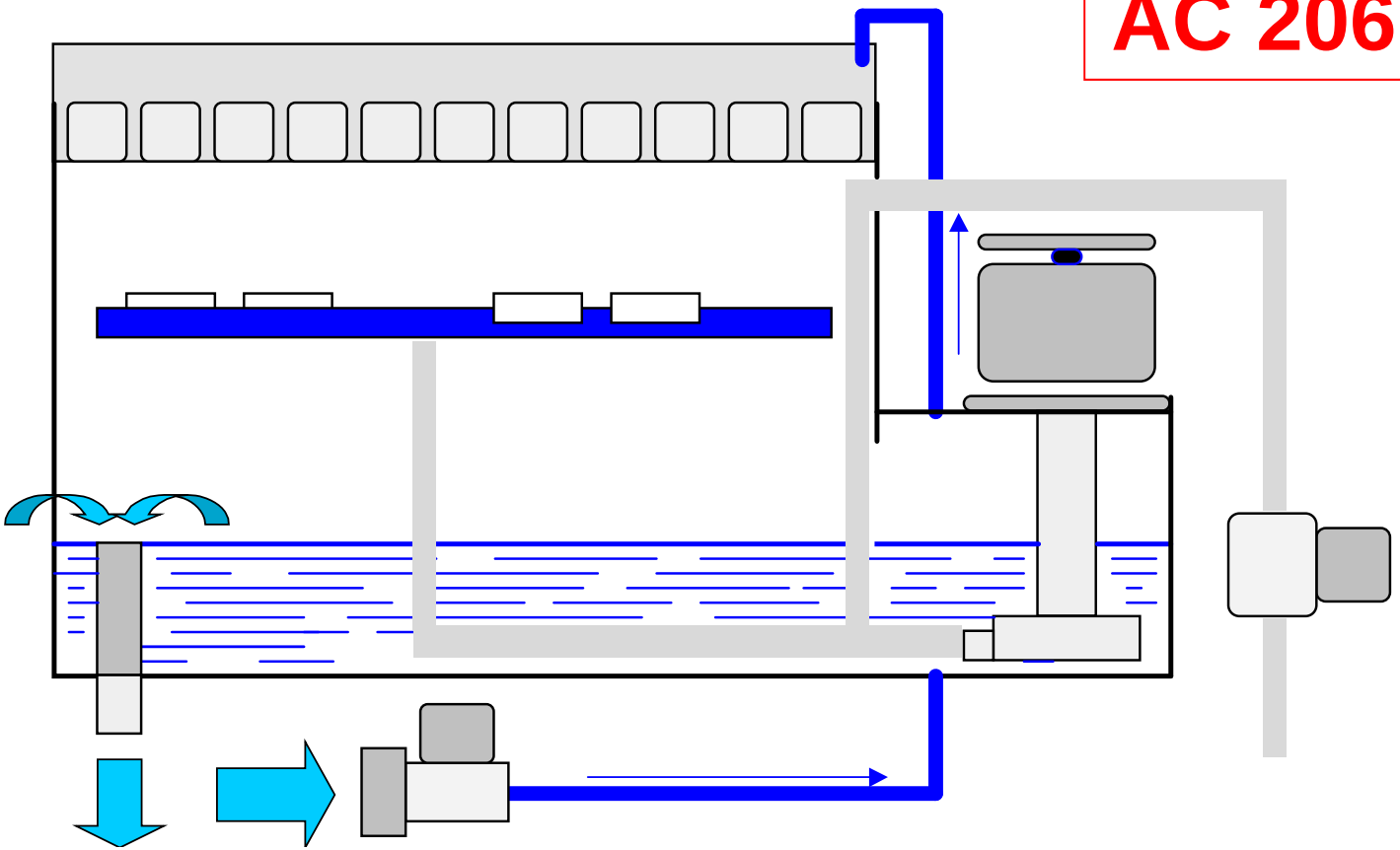
Scotsman®
Ice Systems

NEW AC SERIES

WATER SYSTEM – HARVEST CYCLE

SECOND PORTION

AC 206-226



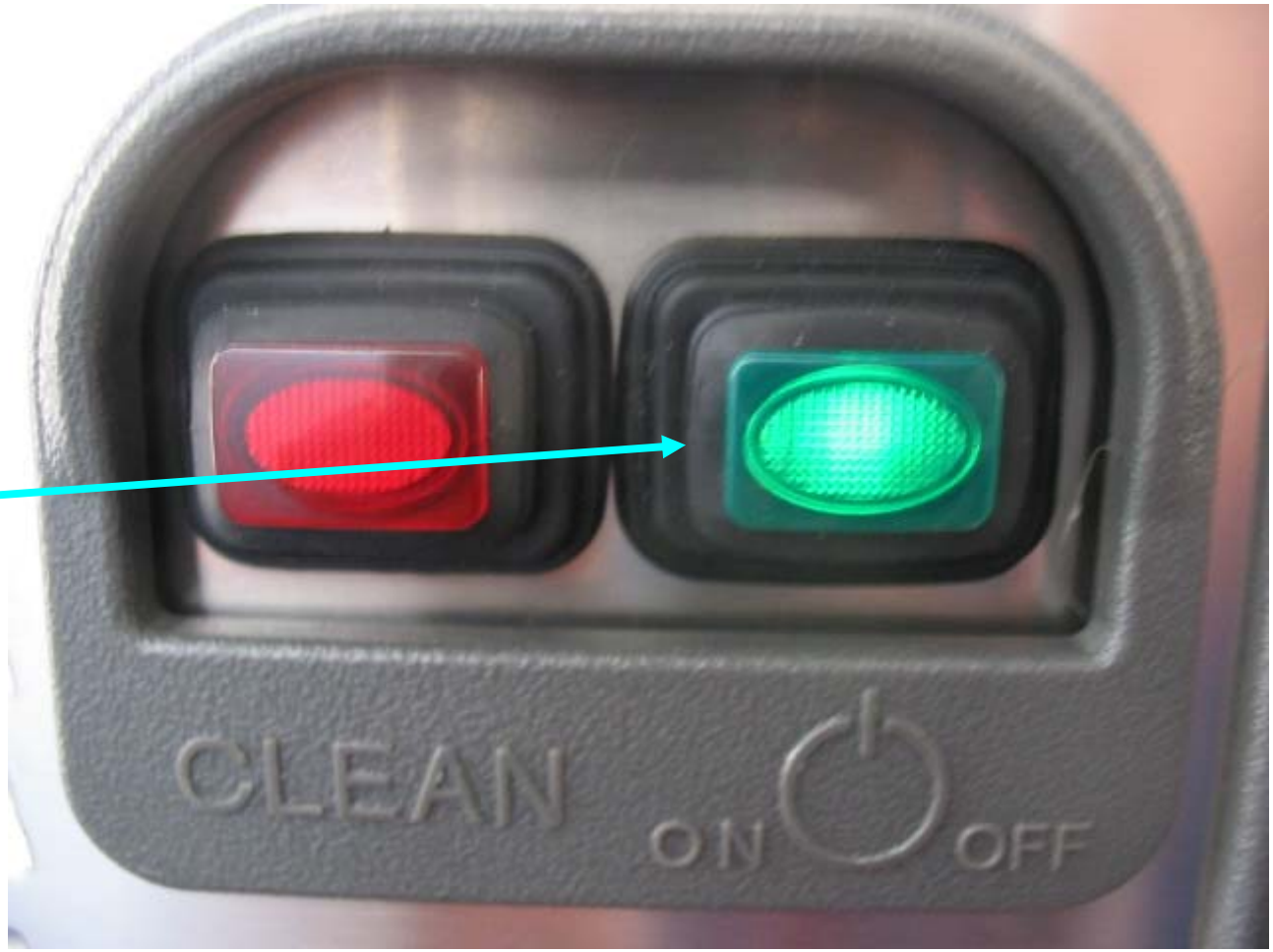
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – MASTER SWITCH

All AC units are equipped with a Green Lighted Master Push Switch located in the front panel.

By pushing it, it possible to Switch ON and OFF the machine.

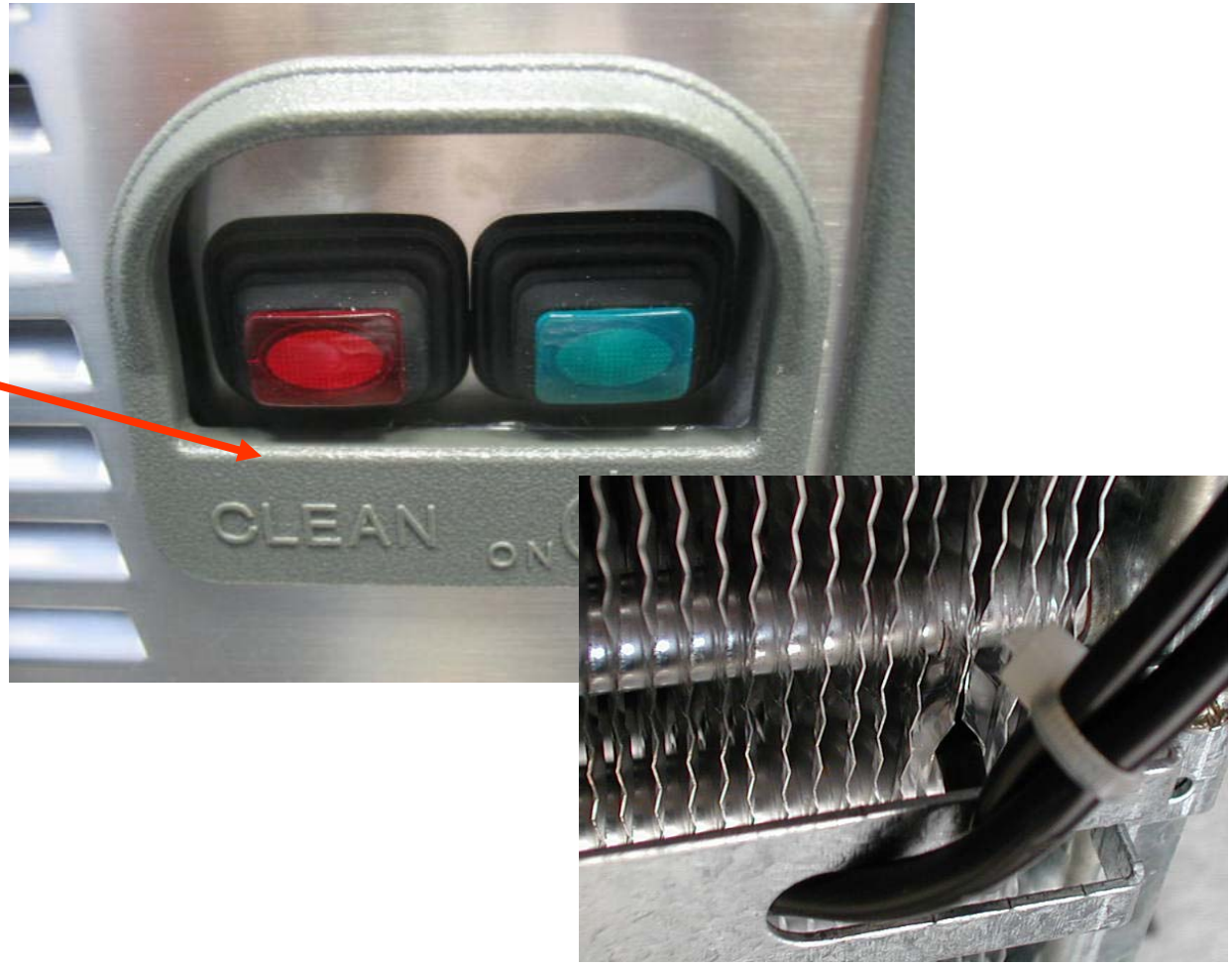


Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – ALARM/RESET SWITCH

Beside the Green Master Switch is located a Red Alarm Light & Reset Switch that operates in conjunction with the condenser sensor…

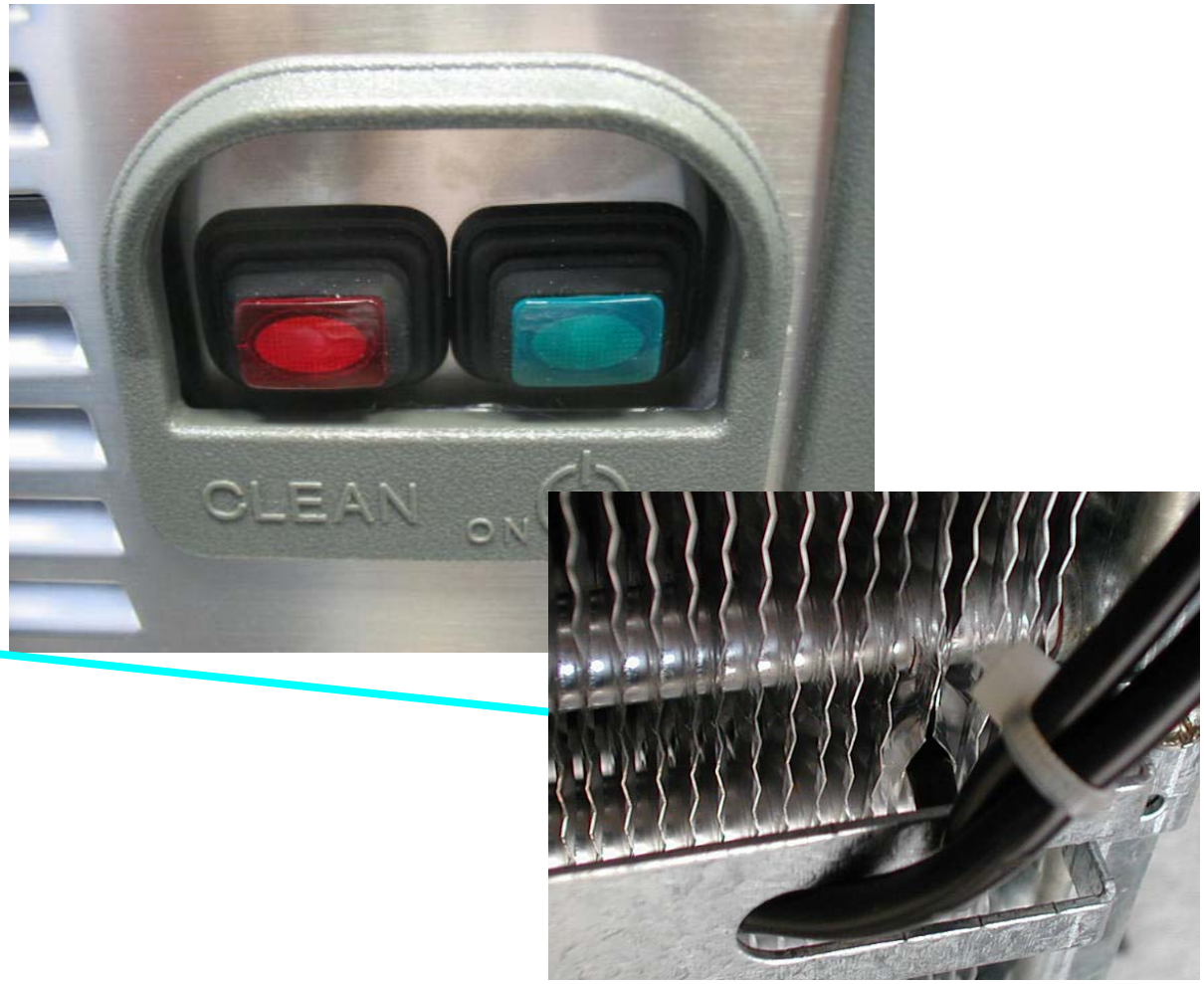


Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – ALARM & REMIND BOARD

…has the main function to transmit, to the External Red Alarm Light, the proper signal according to the need of the machine.



Scotsman® Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – ALARM& REMIND BOARD

LIGHT TEMOIN LUCE	STATUS	REASON WHY SIGNIFICATION SIGNIFICATO
	**ON STEADY** FIXE *FISSO*	**UNIT IN OPERATION** MACHINE EN FONCTIONNEMENT *MACCHINA IN MOTO*
	RED LIGHT ON STEADY WITH MACHINE ON TEMOIN ROUGE FIXE AVEC MACHINE EN FONCTIONNEMENT *LUCE ROSSA FISSA CON MACCHINA IN FUNZIONE*	**CONDENSING TEMP. > 60°C - CLEAN AIR FILTER** TEMP. DU CONDENSEUR > 60°C - NETTOYER LE FILTRE *TEMP. CONDENSATORE > 60°C - PULIRE IL FILTRO*
	RED LIGHT ON STEADY WITH MACHINE OFF TEMOIN ROUGE FIXE AVEC MACHINE A L'ARRET *LUCE ROSSA FISSA CON MACCHINA FERMA*	**CONDENSING TEMP. > 70°C** TEMP. DU CONDENSEUR > 70°C *TEMP. CONDENSATORE > 70°C*
	**BLINKING SLOW WITH MACHINE ON** CLIGNOTANT LENT AVEC MACHINE EN FONCTIONNEMENT *LAMPEGGIANTE LENTO CON MACCHINA IN FUNZIONE*	**WATER SYSTEM NEED TO BE CLEANED** CIRCUIT HYDRAULIQUE A NETTOYER *PULIRE IL CIRCUITO IDRICO*
	BLINKING TWICE AND REPEAT WITH MACHINE OFF CLIGNOTANT DEUX FOIS ET REPETE AVEC MACHINE A L'ARRET *LAMPEGGIANTE A DUE IMPULSI CON MACCHINA FERMA*	**CONDENSER SENSOR OUT OF ORDER** SONDE CONDENSEUR HS *SONDA CONDENSATORE MALFUNZIONANTE*
	BLINKING FAST WITH MACHINE OFF CLIGNOTANT RAPIDE AVEC MACHINE A L'ARRET *LAMPEGGIANTE VELOCE CON MACCHINA FERMA*	**PROBLEMS IN PUMPING OUT WATER (EC SERIES ONLY)** PROBLEMES AVEC EVACUATION EAU (SEUL MODELES EC) *PROBLEMI DI SCARICO ACQUA (SOLO MODELLI SERIE EC)*

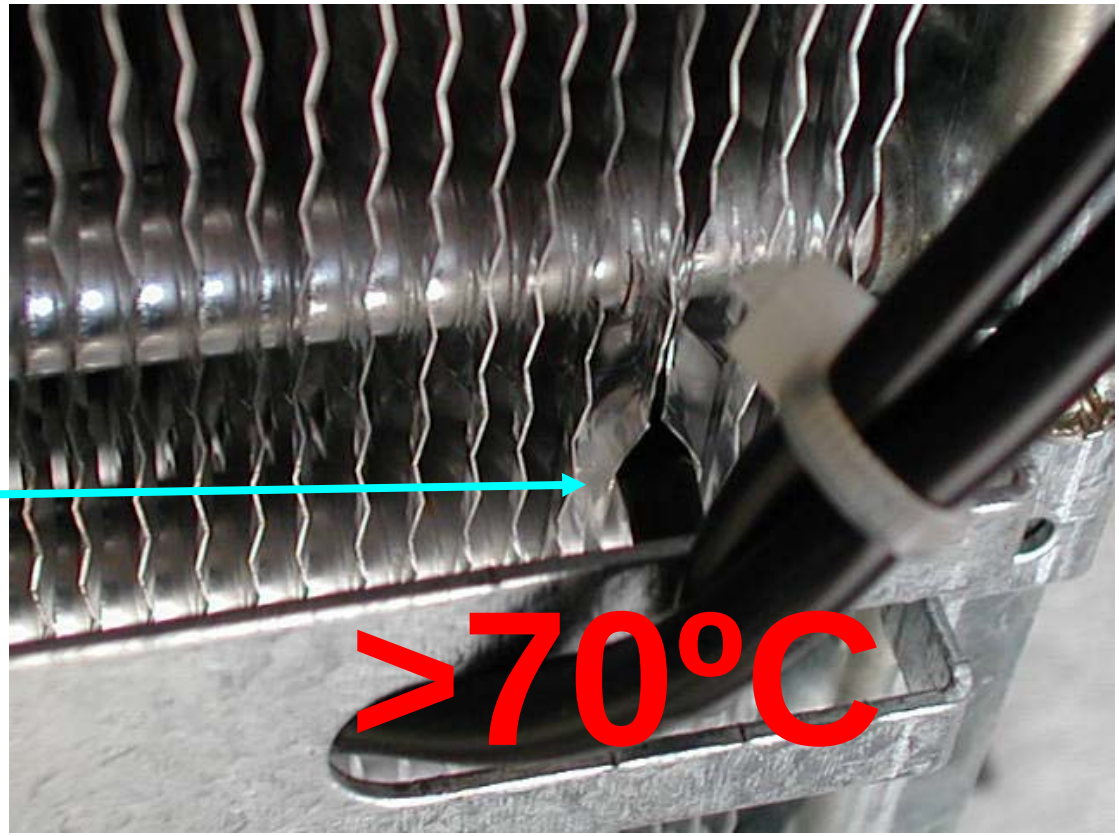
	**PUSH AND HOLD THE RED LIGHTED SWITCH FOR MORE THEN 20" TO RESTART THE CLEANING REMIND COUNTDOWN** APPUYER SUR LE BOUTON ROUGE 20 Secondes POUR REINITIALISER L'ALARME JUSQU'AU PROCHAIN DETARTRAGE *PREMERE IL PULSANTE ROSSO PER PIU' DI 20" PER FAR RIPARTIRE IL CONTEGGIO PER LA PROSSIMA DISINCROSTAZIONE*

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – TRIP OFF

Whenever the condensing temperature rises up to 70ºC, the condenser sensor installed inside the condenser fins ….



Scotsman® Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – TRIP OFF

…send the signal to the Board to Switch Off immediately the operation of the machine.

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – FILTER CLEAN

In case the Red Light is blinking FAST with the machine in operation it means….

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – FILTER CLEAN

…. that the condensing

temperature is more

then 60°C but less

then 70° and the

condenser air filter

needs to be cleaned.

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – WATER SYSTEM CLEAN

In case the Red Light is blinking SLOW with the machine in operation it means….

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – WATER SYSTEM CLEAN

…. to proceed with the cleaning of the water system of the machine as detailed on the “Cleaning section”.

AC 46-56-86

MAINTENANCE

TOOLS REQUIRED

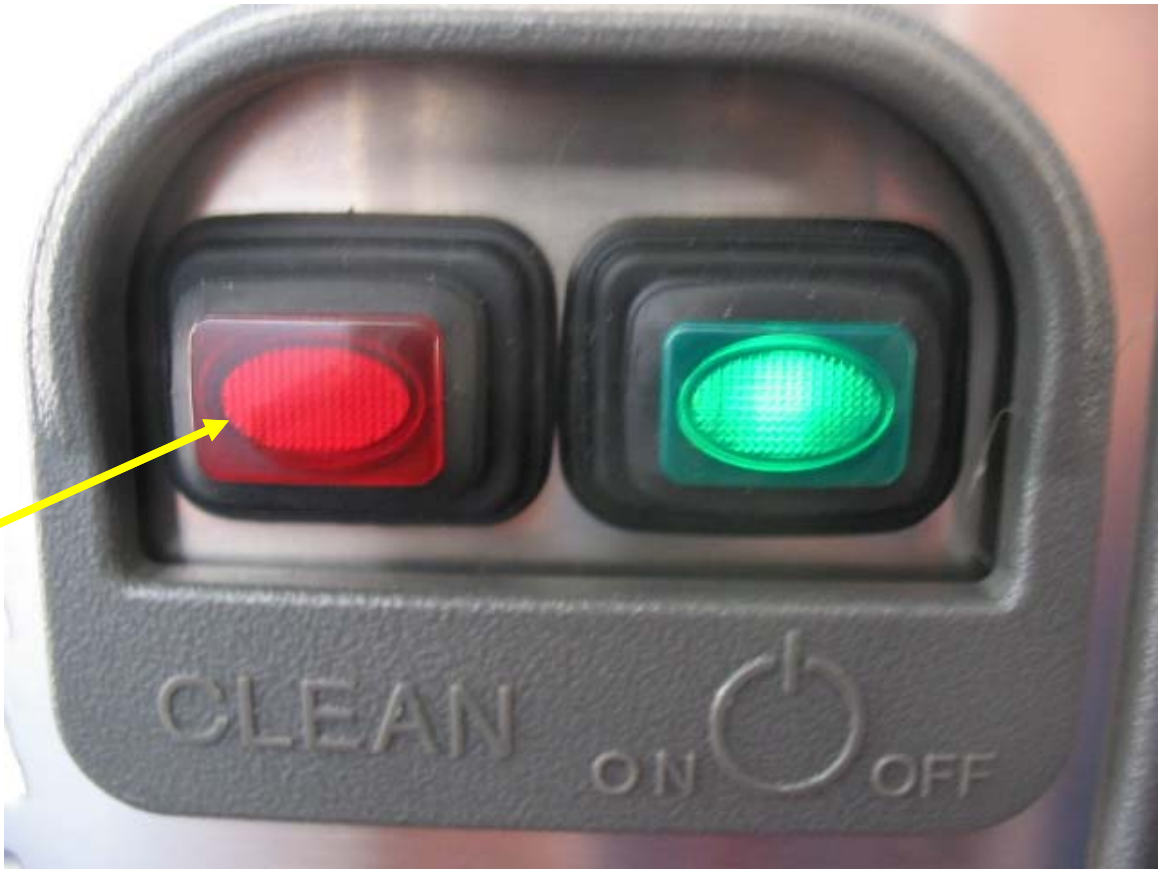
- Medium Phillips Screwdriver
- Medium Flat Screwdriver
- Pair of safety gloves
- Bucket
- Different types of brush
- Approved Cleaner/Sanitiser

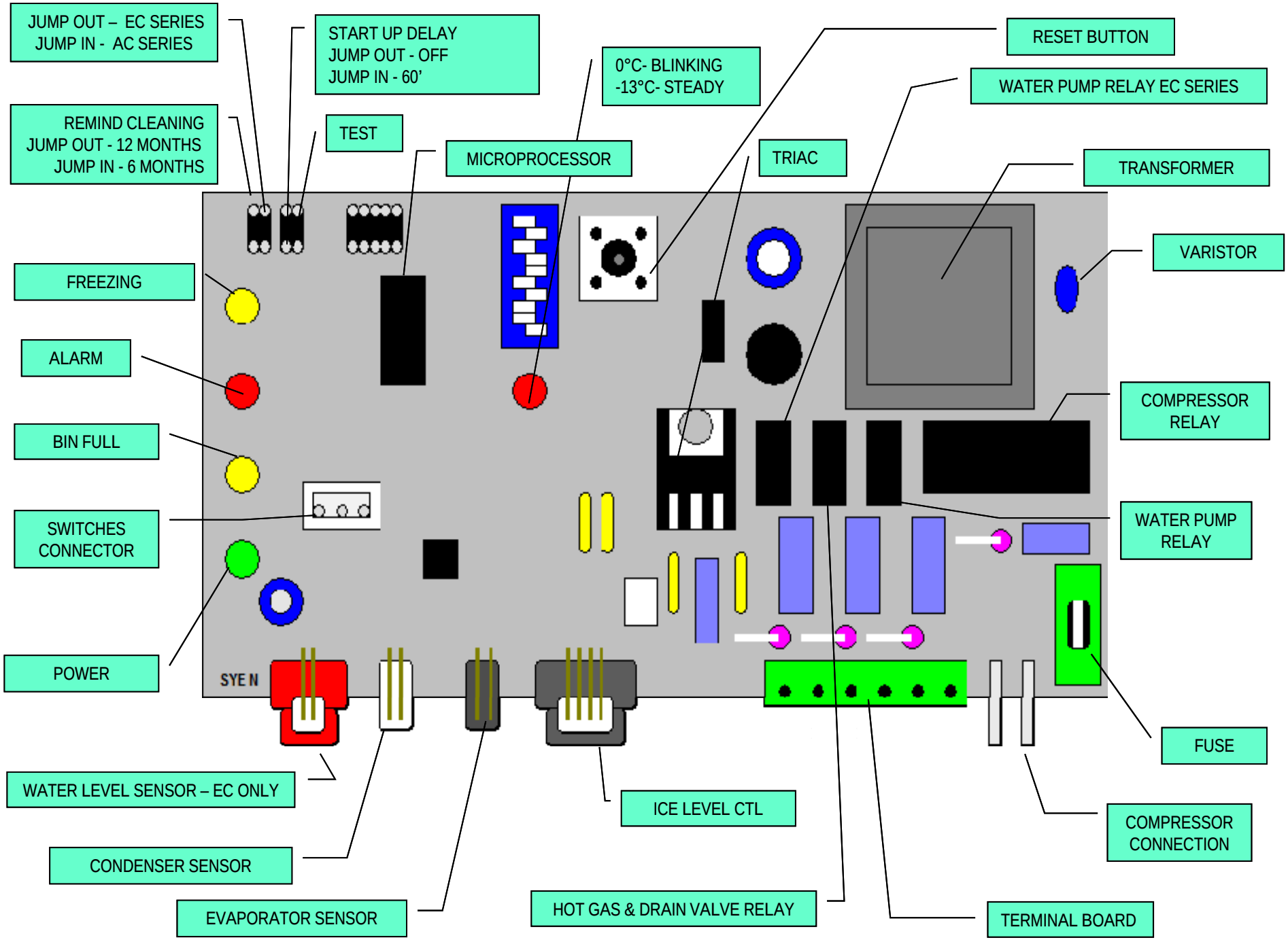
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – WATER SYSTEM CLEAN

Once water system is cleaned it's necessary to restart the count down timer, of the Remind PC Board, by pushing and holding for more then 20" the Red Re-Set button.




JUMP OUT – EC SERIES
JUMP IN - AC SERIES
START UP DELAY
JUMP OUT - OFF
JUMP IN - 60'
0°C- BLINKING
-13°C- STEADY
RESET BUTTON
WATER PUMP RELAY EC SERIES
REMIND CLEANING
JUMP OUT - 12 MONTHS
JUMP IN - 6 MONTHS
TEST
MICROPROCESSOR
TRIAC
TRANSFORMER
VARISTOR
FREEZING
ALARM
BIN FULL
COMPRESSOR RELAY
SWITCHES CONNECTOR
WATER PUMP RELAY
POWER
SYE N
FUSE
WATER LEVEL SENSOR – EC ONLY
ICE LEVEL CTL
COMPRESSOR CONNECTION
CONDENSER SENSOR
EVAPORATOR SENSOR
HOT GAS & DRAIN VALVE RELAY
TERMINAL BOARD

Scotsman® Ice Systems

NEW AC SERIES

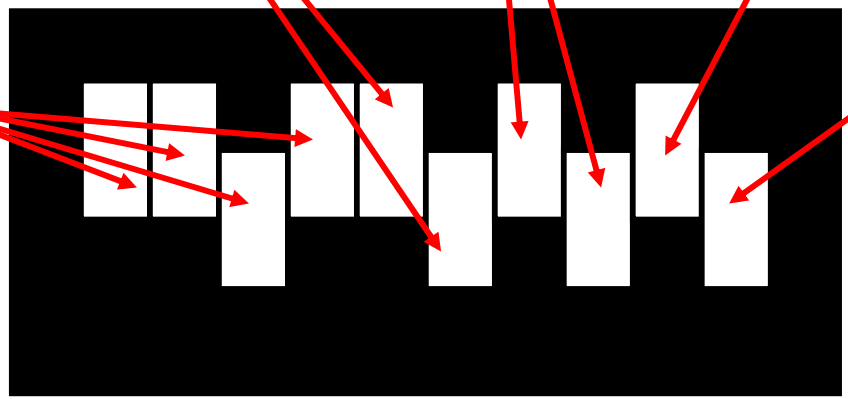
OPERATING PRINCIPLES – DIP SWITCHES

SWITCH 5 AND 6 LENGTH OF THE HARVEST CYCLE ACCORDING TO THE TIME T_2

SWITCH 7 AND 8 EXTENTION TIME OF HARVEST CYCLE BY 0", 30", 60" OR WATER PUMP OFF

SWITCH 9 OPERATING TIME OF WATER PUMP DURING HARVEST OFF = 15" ON = 30"

SWITCH 1, 2, 3 AND 4 SETTING OF THE TIMED PORTION OF FREEZING CYCLE



SWITCH 10 CONDENSER SAFETY CUT OUT TEMPERATURE (60ºC WATER - OFF AND 70ºC AIR - ON)

Scotsman Ice Systems

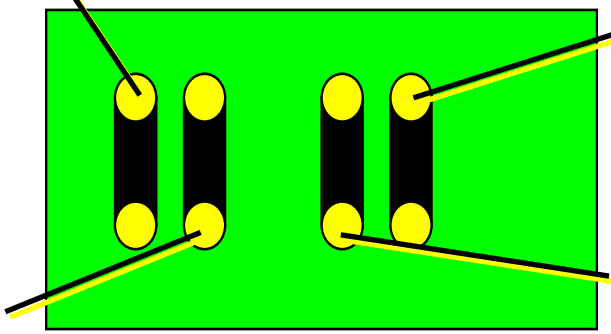
NEW AC SERIES

OPERATING PRINCIPLES – JUMPERS

WATER SYSTEM CLEANING REMIND
JUMP IN - 6 MONTHS
JUMP OUT - 12 MONTHS

RAPPEL NETTOYAGE SYSTEME HYDRAULIQUE
CONTACT FERME' - 6 MOIS
CONTACT OUVERTE - 12 MOIS

RICHIAMO PULIZIA SISTEMA IDRICO
CONTATTO CHIUSO - 6 MESI
CONTATTO APERTO - 12 MESI



TEST

AC/EC MODELS
JUMP IN – AC SERIES
JUMP OUT - EC SERIES

MODELES AC/EC
CONTACT FERME' - SERIES AC
CONTACT OUVERTE - SERIES EC

MODELLI AC/EC
CONTATTO CHIUSO - SERIE AC
CONTATTO APERTO - SERIE EC

START UP DELAY
JUMP IN - 0 MIN.
JUMP OUT - 60 MIN.

RETARD AU DEMARRAGE
CONTACT FERME' - 0 MIN
CONTACT OUVERTE - 60 MIN

RITARDO ALLA PARTENZA
CONTATTO CHIUSO - 0 MIN
CONTATTO APERTO - 60 MIN.

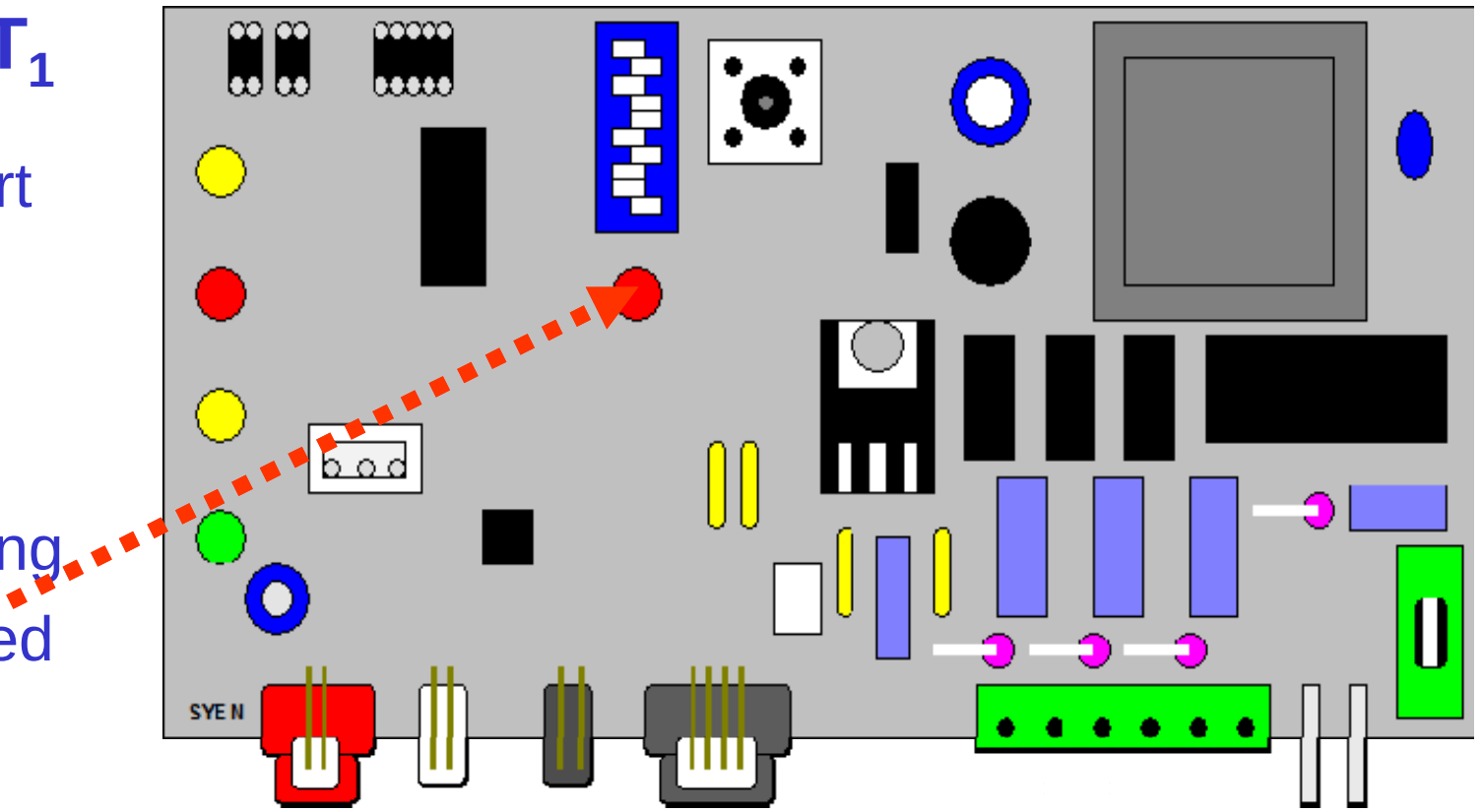
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD

Time T_1

From start up of freezing cycle till the blinking of 0°C Red LED



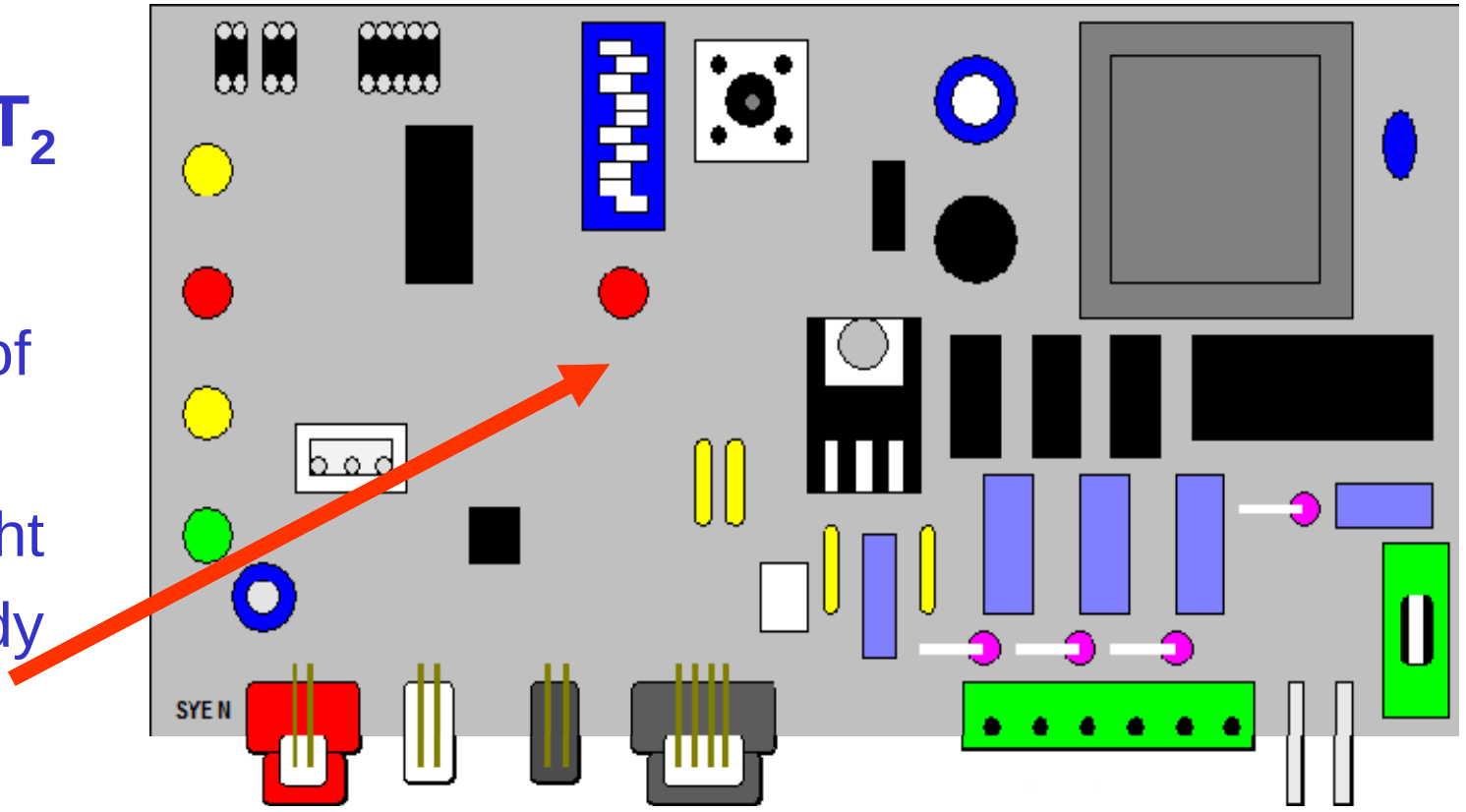
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD

Time T_2

From blinking of Red LED till the light ON steady of -15°C Red LED



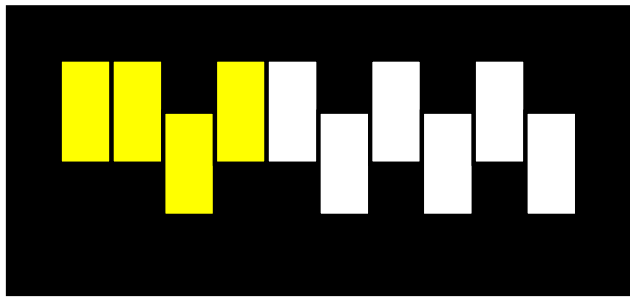
Scotsman Ice Systems

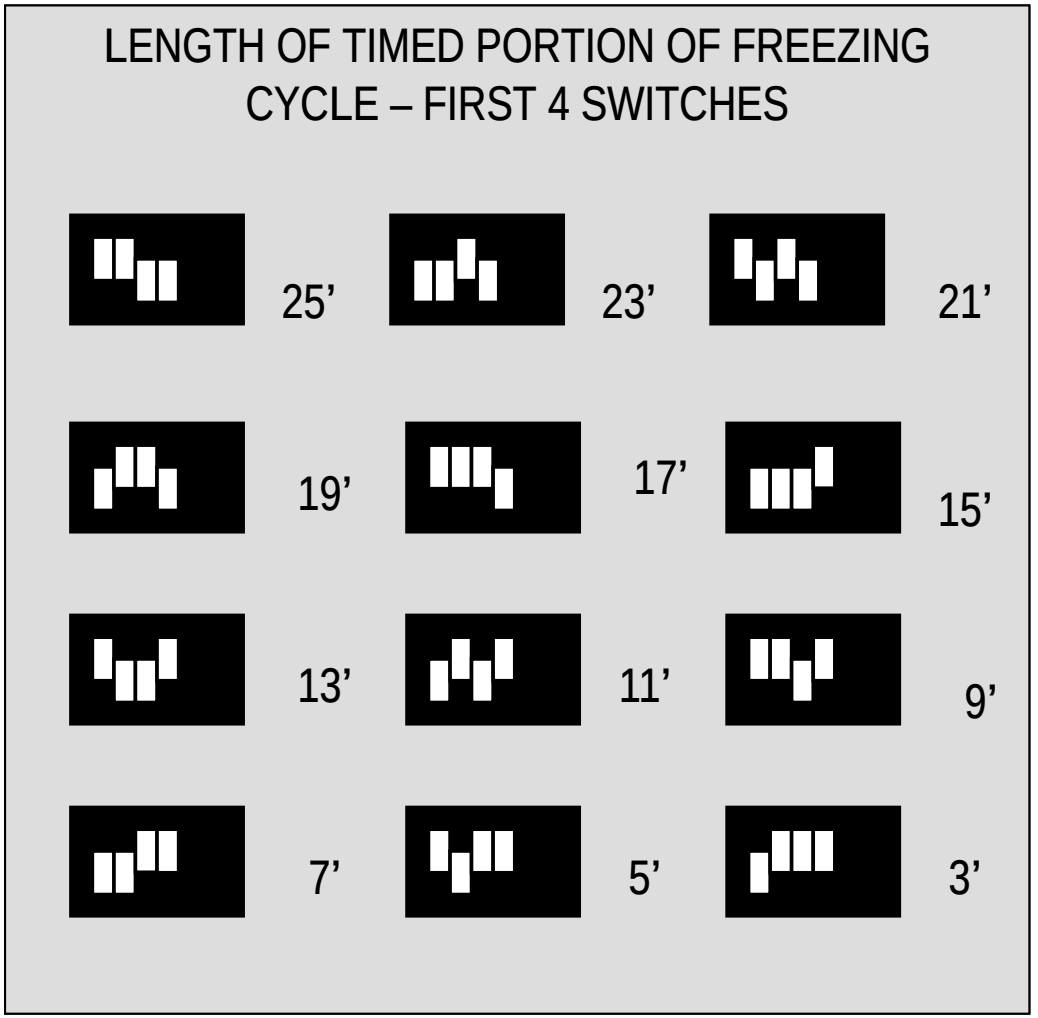
NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD

Time T_a

Added time controlled by the PC Board according to the setting of the DIP SWITCH 1, 2, 3 and 4.





Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD

Time T_s

Harvest **Time T_s** is controlled by the PC Board and it is inversely proportional to the Time T_2 of the Freeze Cycle (from 0ºC to -13ºC) as per the **combination A** of the Table.

Time T_s is NOT adjustable.

LENGTH OF HARVEST CYCLE ACCORDING TO THE TIME TO DROP THE EVAP. TEMPERATURE FROM 0ºC TO -13ºC

LENGTH HARVEST CYCLE	PROGRAMS			
	A	B	C	D
180”	Up to 6’	***	Up to 9’	***
165”	6’-7’	Up to 3’	9’-10’	***
150”	7’-8’	3’-3’15’	10’-11’	***
135”	8’-9’	3’15”-3’30”	11’-12’	***
120”	9’-10’	3’30”-4’30”	12’-13’	Up to 3’
105”	10’-12’	430”-6’	13’-15’	3-4’
90”	>12’	>6’	>15’	>4’

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD

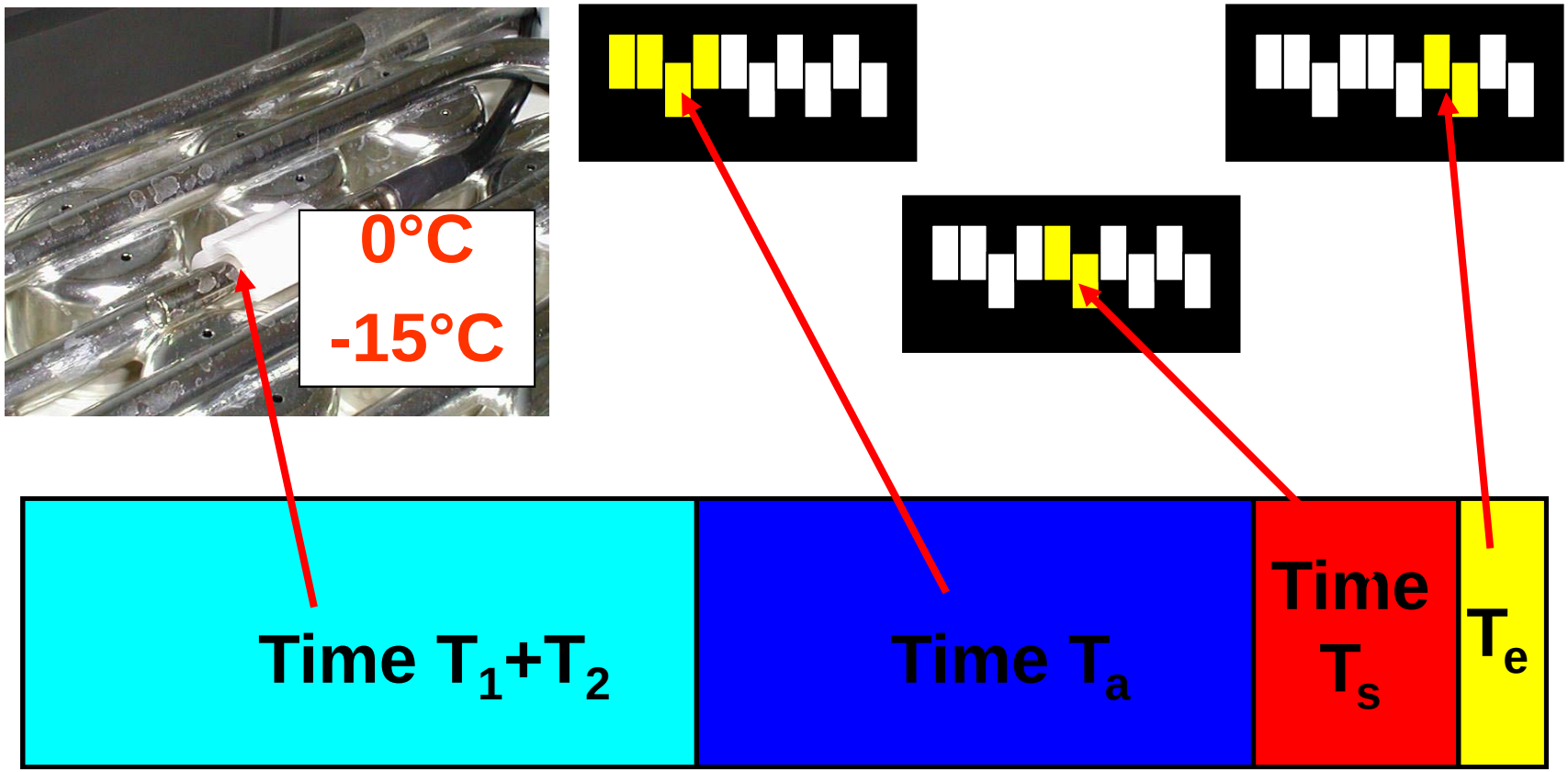
It's possible to **extend the length of the harvest cycle (T_e)** by means of the **DIP SWITCH 7 and 8** as per below chart.

DIP SWITCH		ADDITIONAL DEFROST TIME
7	**8**	
ON	ON	0
OFF	ON	30"
ON	OFF	60"
OFF	OFF	**WATER PUMP OFF**

Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD



Freezing = $T_1 + T_2 + T_a$

Defrost/Harvest = $T_s + T_e$

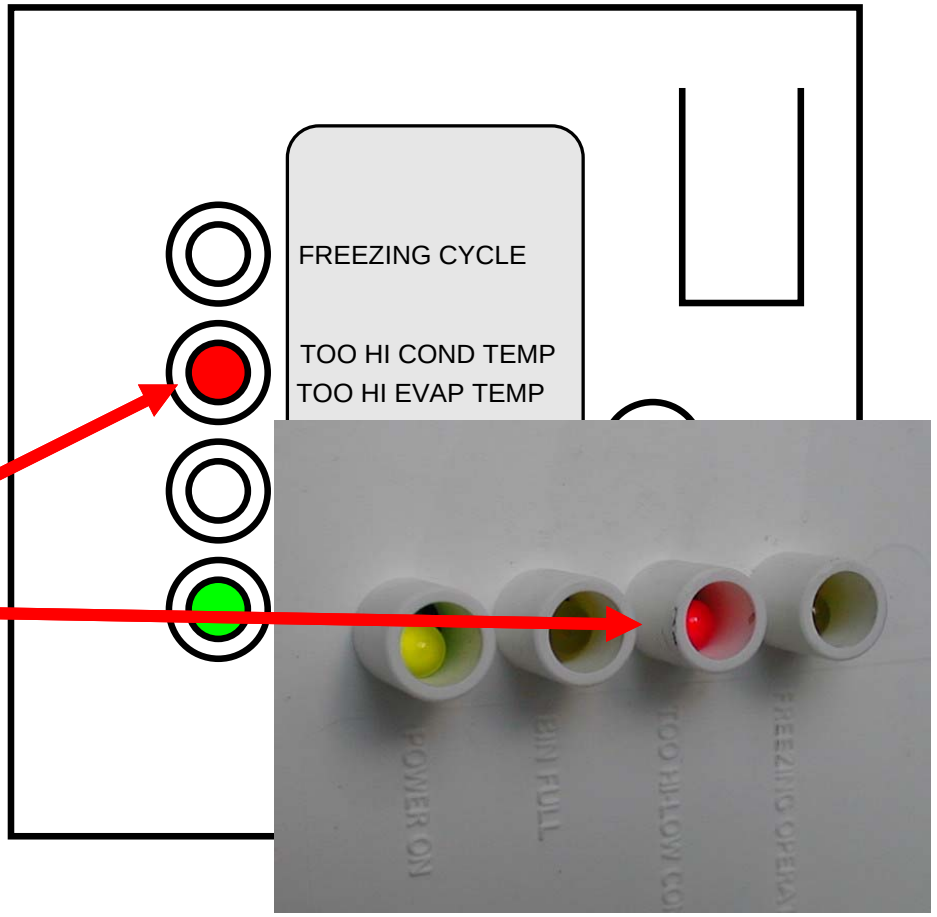
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS

TOO HI COND. TEMPERATURE

Whenever the condensing temperature rise up to **70ºC** (air cooled version) or **60ºC** (water cooled version) the PC Board will switch OFF immediately the entire machine with the **light ON** of the **Red ALARM LED**.



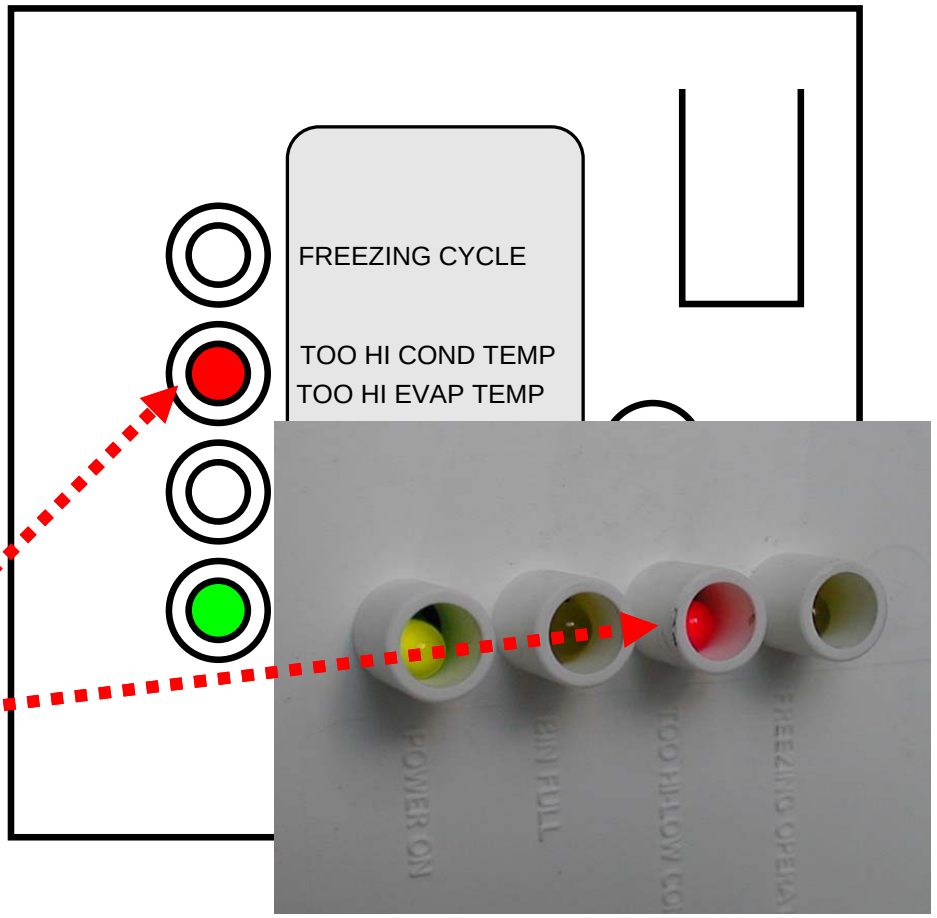
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS

TOO HI EVAPORATOR TEMPERATURE

In case the evaporating temperature remains higher then **0ºC after 15 minutes** from the beginning of the freezing cycle the PC Board will switch OFF immediately the entire machine with the **blinking** of the **Red ALARM LED**.



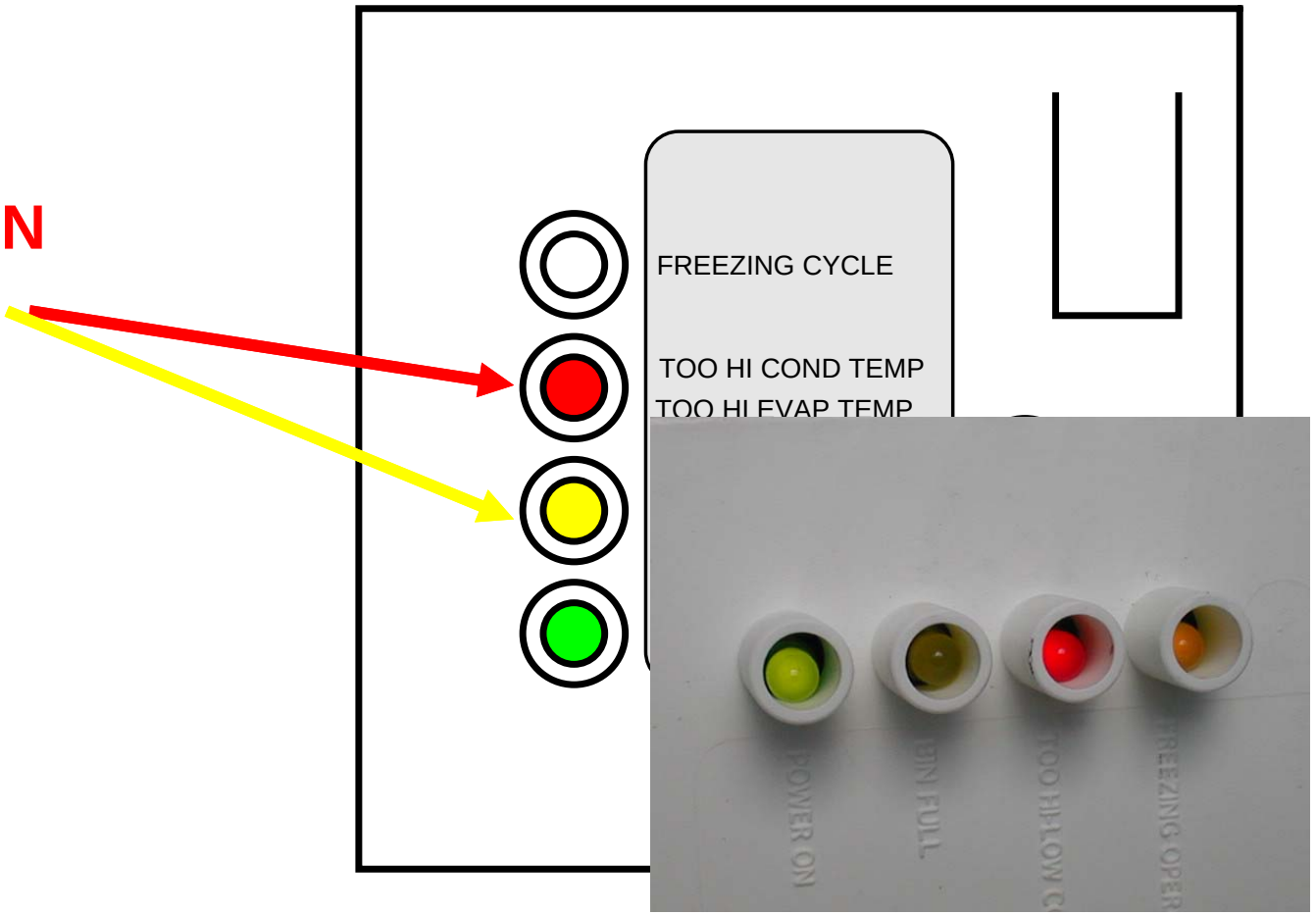
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS

CONDENSER SENSOR OUT OF ORDER

In case both the Red and Yellow LED are **light ON steady** the condenser sensor is out of order and need to be replaced.



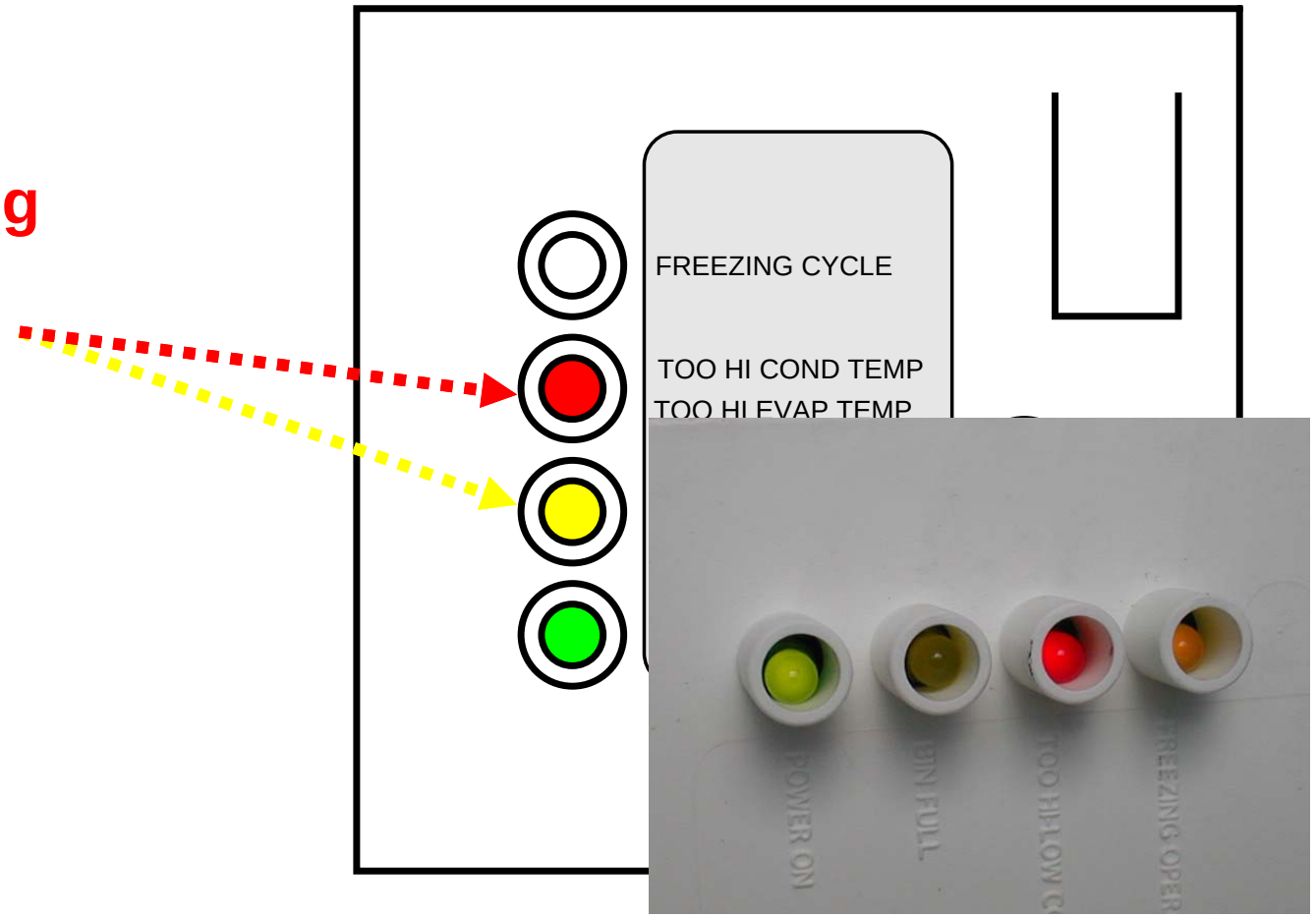
Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS

EVAPORATOR SENSOR OUT OF ORDER

In case both the Red and Yellow LED are **blinking** the evaporator sensor is out of order and need to be replaced.

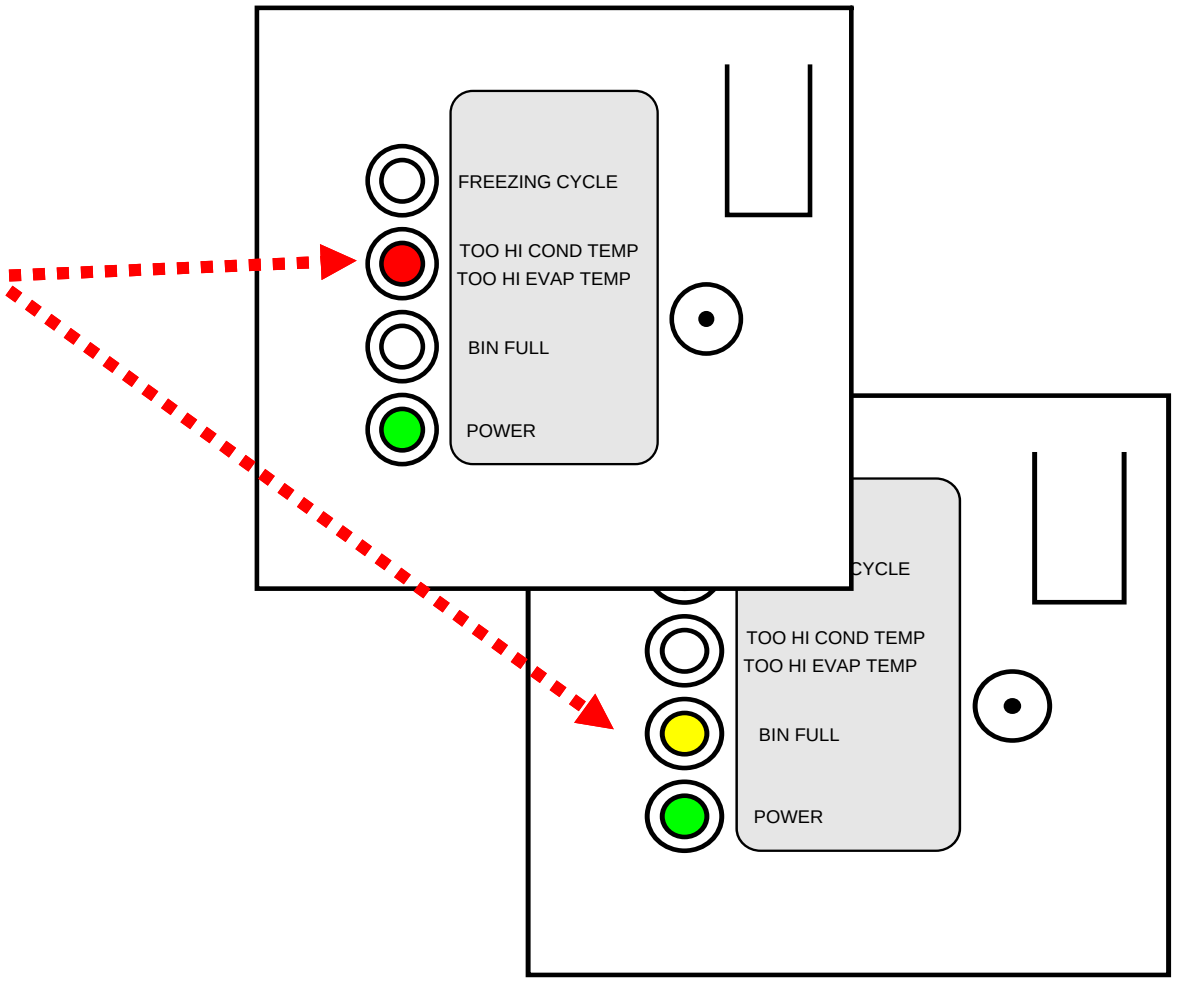


Scotsman Ice Systems

NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS
ICE LEVEL CONTROL OUT OF ORDER

Whenever red and yellow LEDs blinks alternatively ice level control is our of order then have to be replaced



Scotsman Ice Systems

NEW AC SERIES

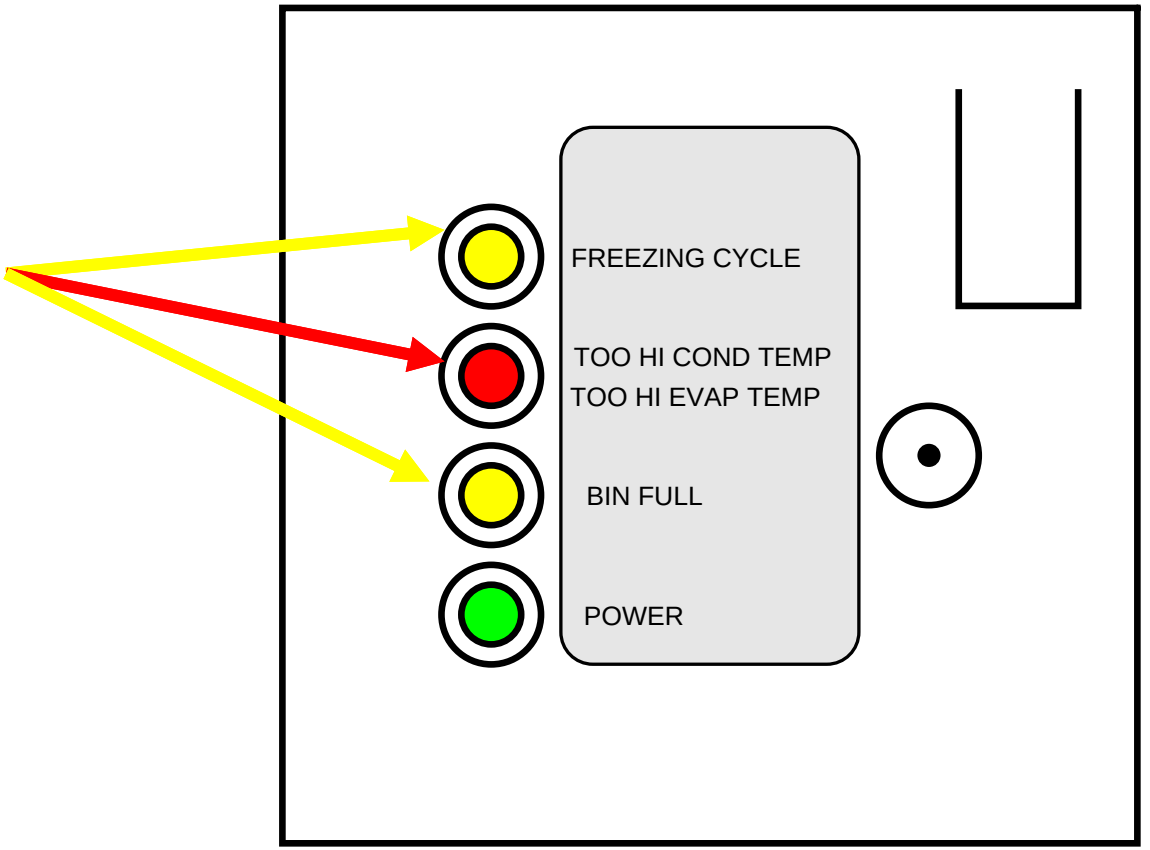
OPERATING PRINCIPLES – PC BOARD ALARMS
ICE LEVEL CONTROL CALIBRATION

Three LED flash :

ice level control –

PCB balance /

calibration done



Scotsman Ice Systems

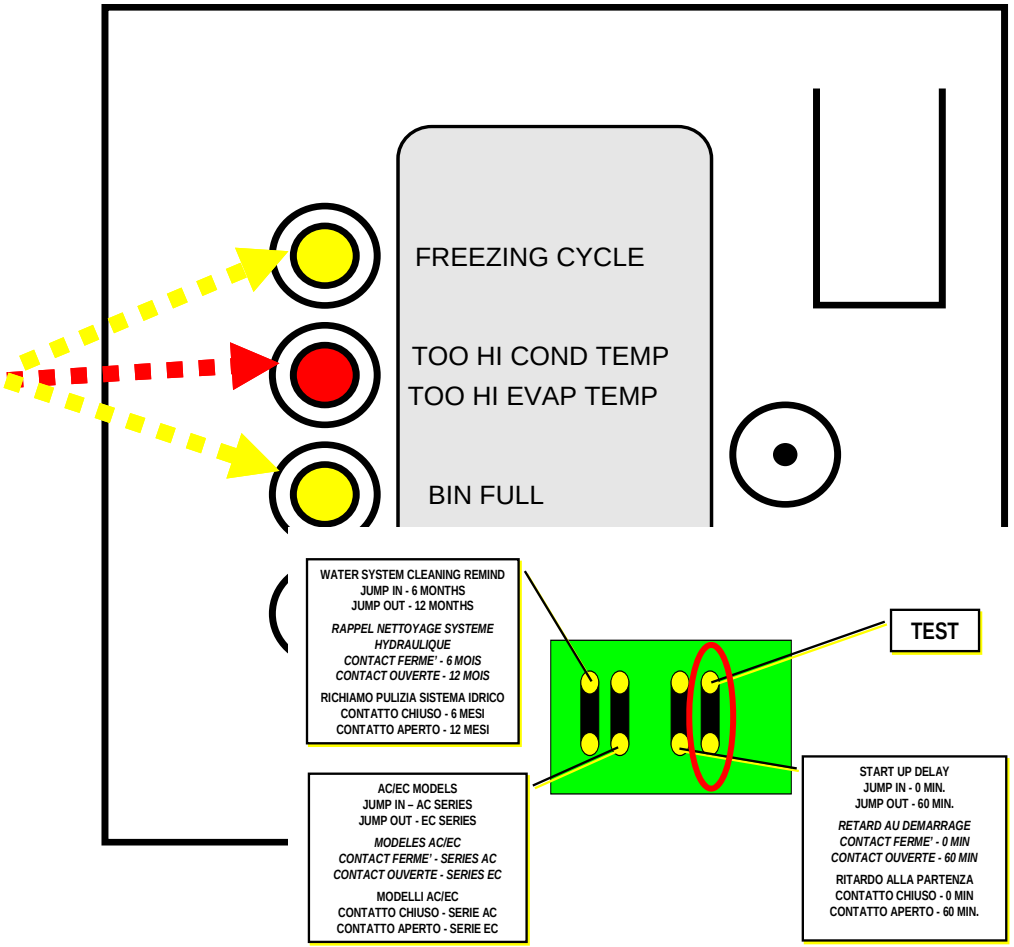
NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS
CLEANING – MISSING TEST JUMPER

Three LEDs blinking: unit in

cleaning cycle or missing

test jumper removal



Scotsman Ice Systems

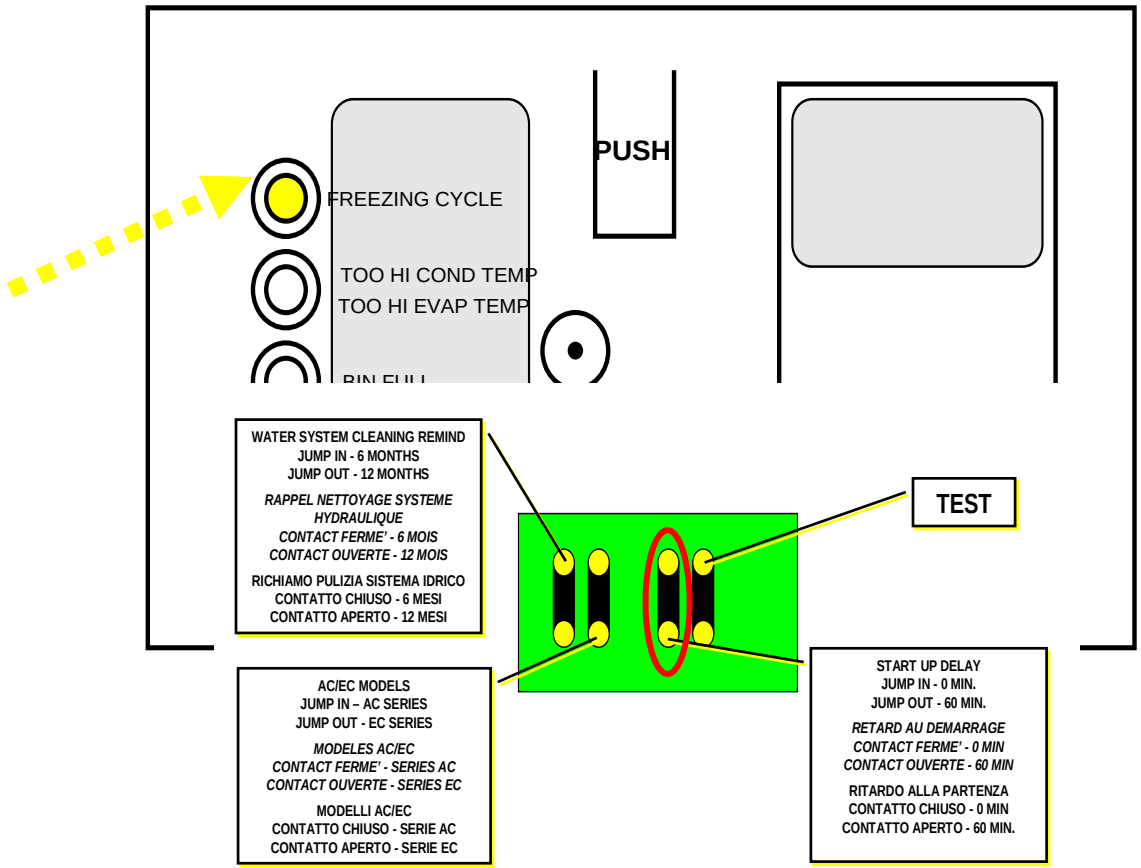
NEW AC SERIES

OPERATING PRINCIPLES – PC BOARD ALARMS

START UP DELAY

Yellow LED blinking at unit start up with ice maker OFF:

60’ delay – Jumper J3 OPEN



Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

The components of the refrigerant system of the Models AC 106 up to AC 226 are composed by:

- **COMPRESSOR**

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

- CONDENSER

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

- EVAPORATOR

Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

- SUCTION LINE AND CAPILLARY TUBE

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

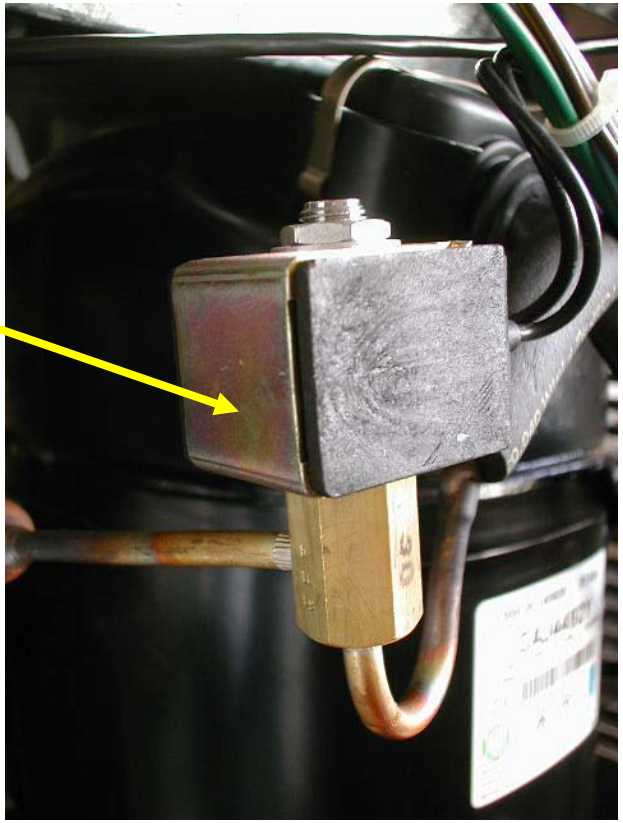
- DRIER

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - REFRIGERANT SYSTEM

- HOT GAS VALVE



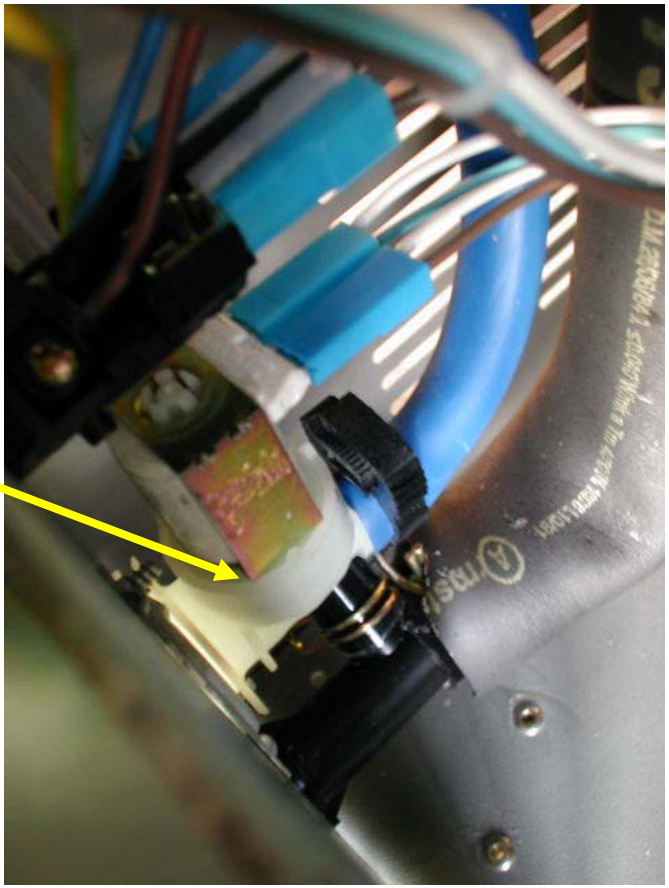
Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

The components of the water system of the Models AC 106 up to AC 226 are composed by:

- **WATER INLET VALVE**



Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **WATER SUMP**

AC 106-126-176

Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **WATER SUMP**

AC 206-226

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **WATER PUMP**

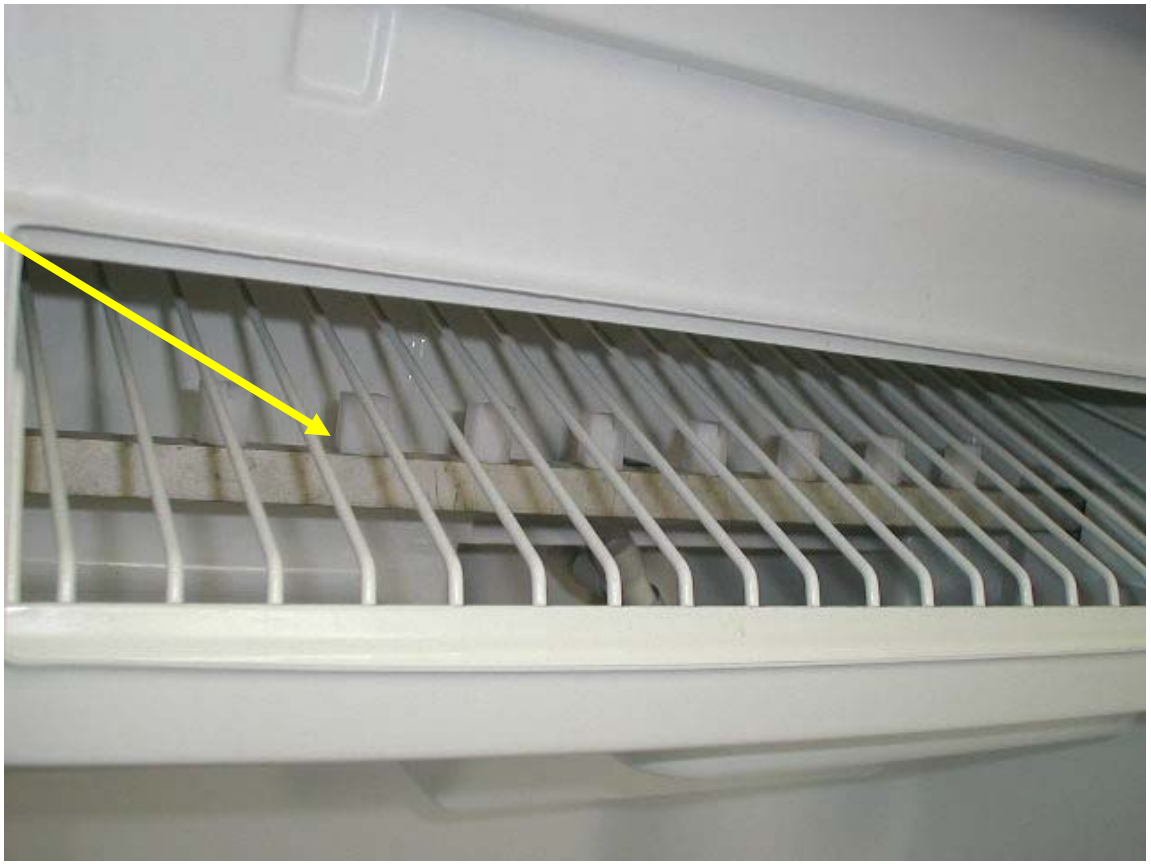
Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- SPRAY PLATEN

AC 106 ONLY



Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **SPRAY PLATEN**

AC 126-176

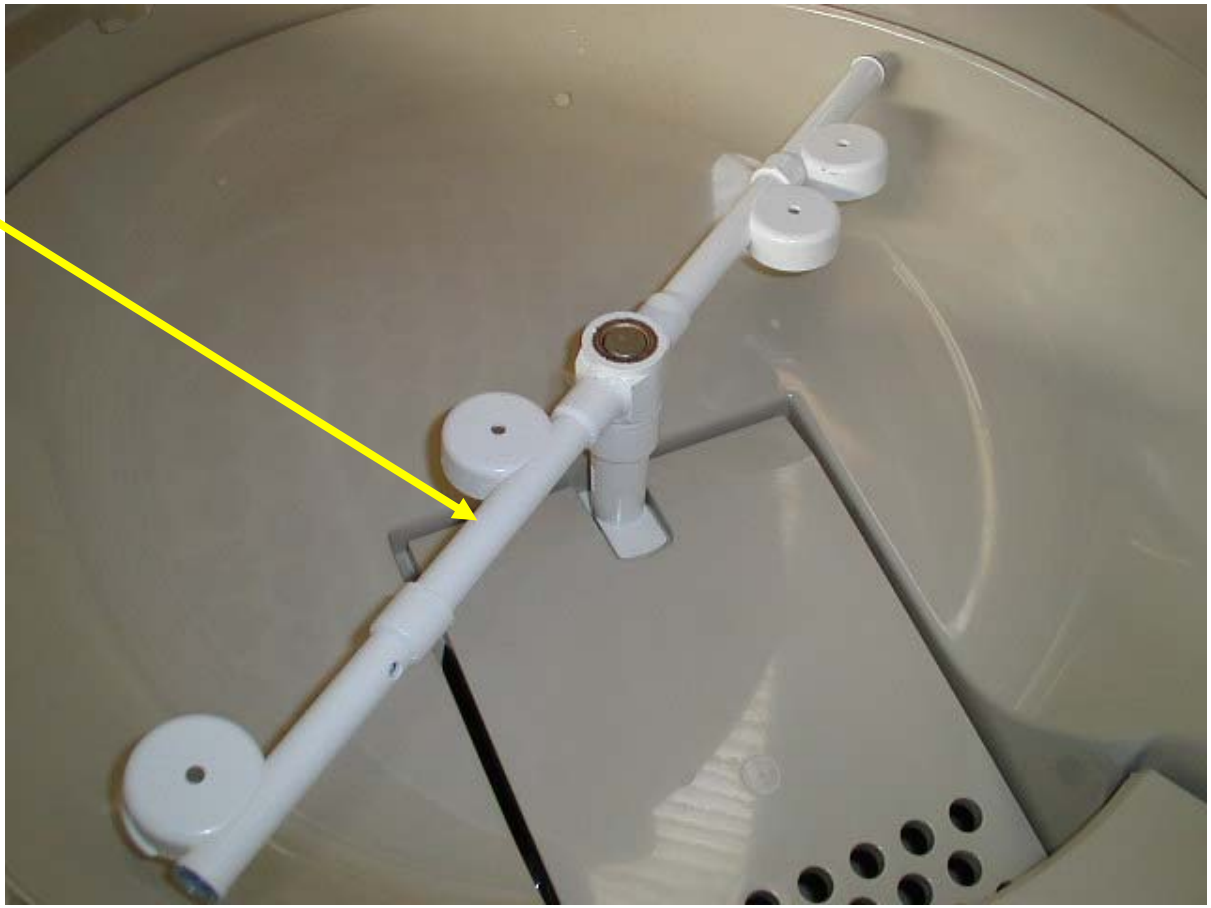
Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **SPRAY BAR**

AC 206-226



Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **OVERFLOW**

AC 106-126-176

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **OVERFLOW**

AC 206-226

Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - WATER SYSTEM

- **WATER DRAIN VALVE**

(NOT used on AC 106)

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

The components of the Electric System of the Models AC 106 up to AC 226 are composed by:

- **MASTER SWICH**

Scotsman®
Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

- **ALARM-RESET SWITCH**

Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

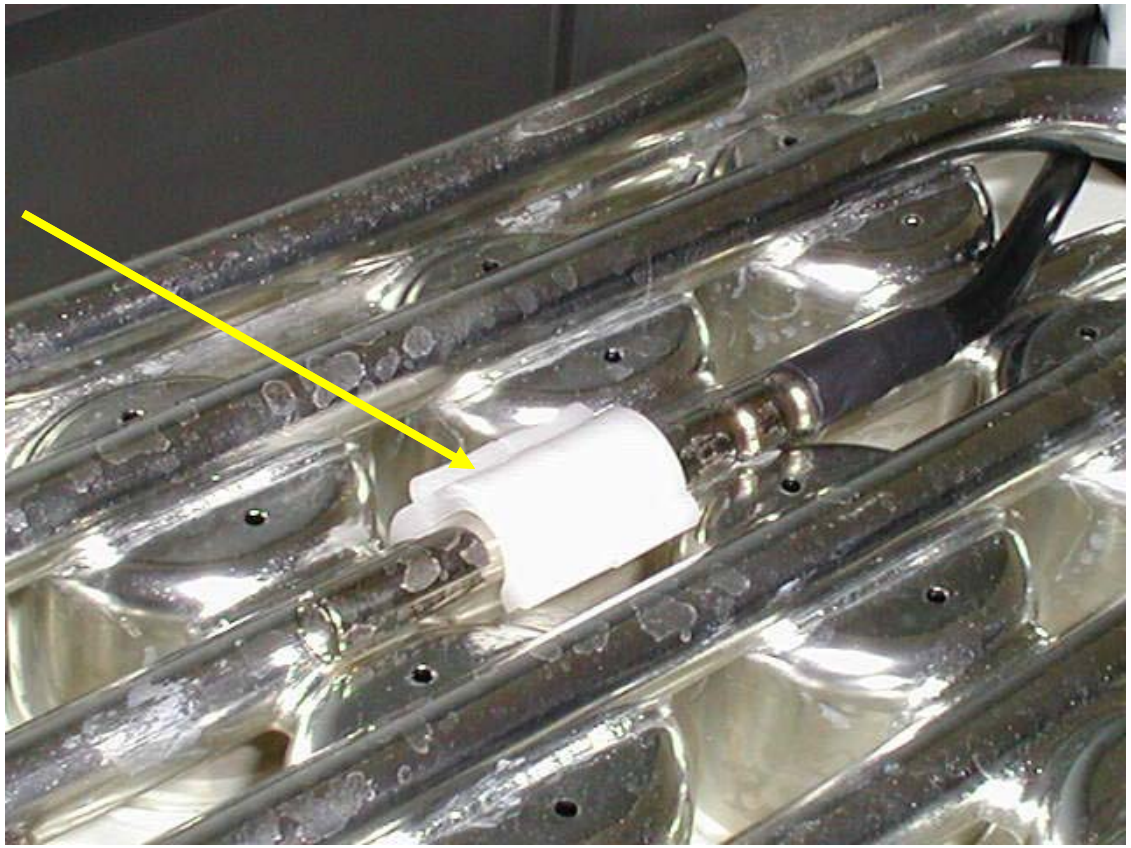
- PC BOARD

Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

- EVAPORATOR SENSOR

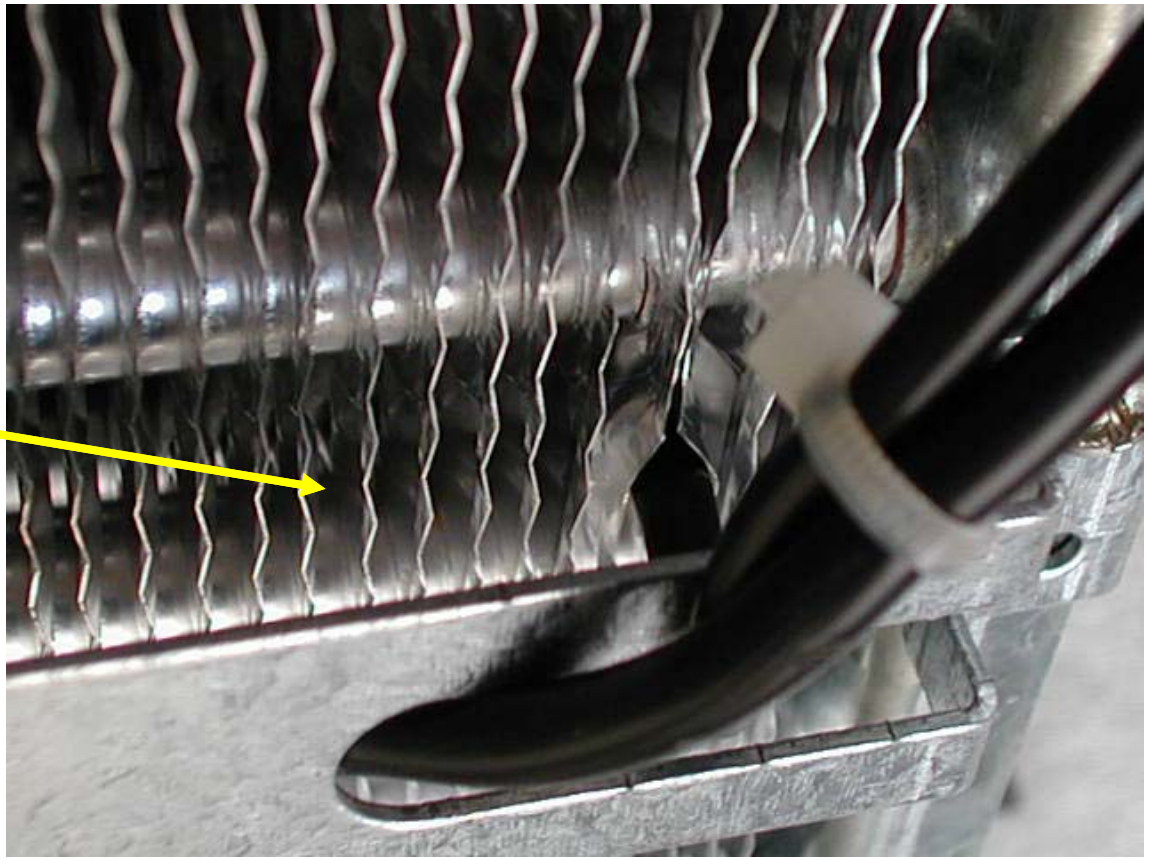


Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

- CONDENSER SENSOR

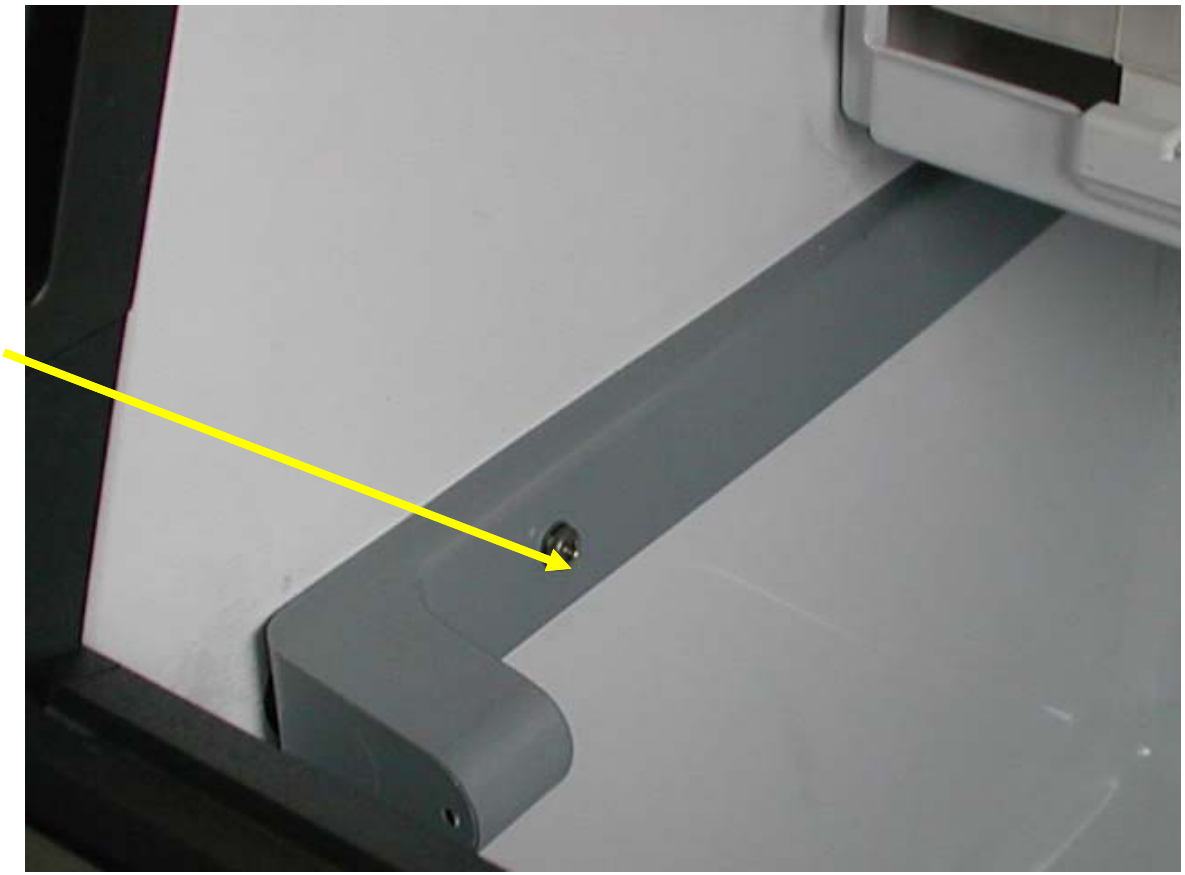


Scotsman® Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

- OPTICAL ICE LEVEL CONTROL

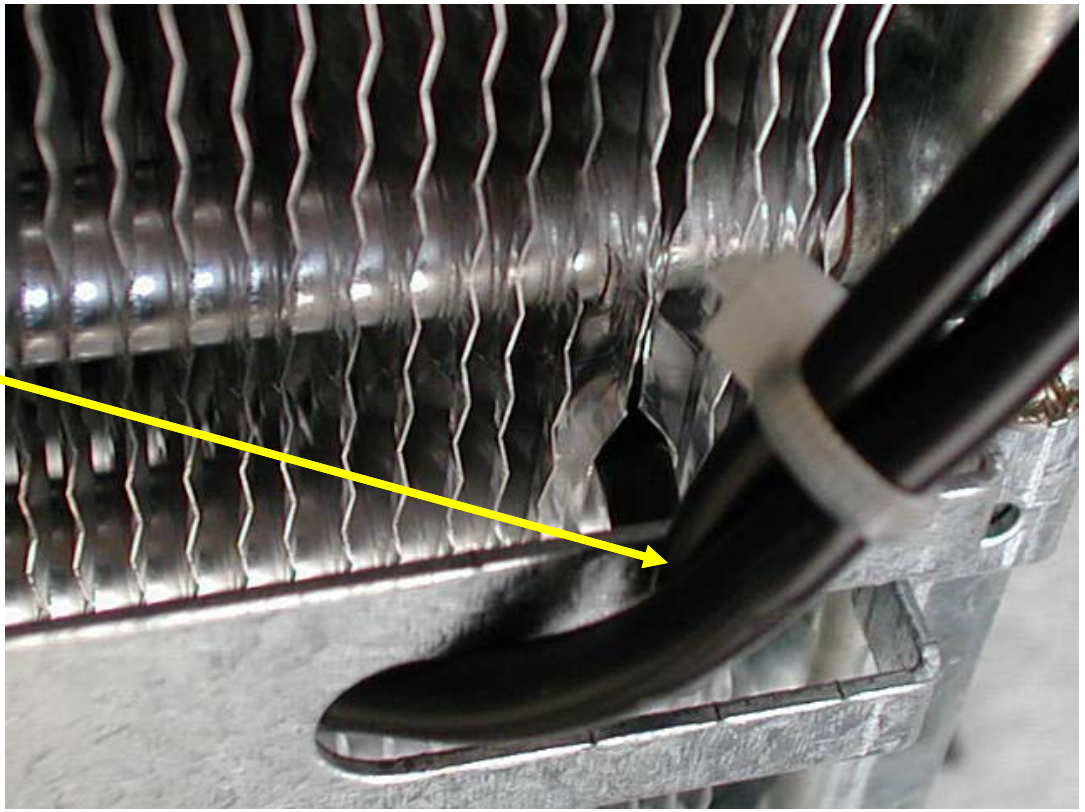


Scotsman Ice Systems

NEW AC SERIES

COMPONENTS - ELECTRICAL CONTROLS

- CONDENSER SENSOR




Scotsman
Ice Systems
END FIRST
HALF