

TECHNICAL SERVICE MANUAL

MODELS:

FIM 20C

FIM 30C

FIM 40C

FIM 60C

FIM 90C

FIM 130C

MODULAR:

MFIM 200C

CAREFULLY READ THE INSTRUCTIONS CONTAINED IN THIS MANUAL SINCE THEY PROVIDE IMPORTANT INFORMATION RELATIVE TO SAFETY DURING INSTALLATION, USE AND MAINTENANCE.

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1. INTRODUCTION

Thank you for choosing Fagor's FIM-C ice cube makers.

You have purchased one of the most reliable ice-making machines on the market. Carefully read the instructions contained in this manual since they provide important information relative to safety during installation, use and maintenance.

1.1. Warnings

This appliance should be installed by approved Technical Service Personnel.

This plug should be accessible at all times.

To reduce the risk of electrical shock, ALWAYS disconnect the machine BEFORE cleaning or maintaining the equipment. Do not attempt to install, service, or modify this machine. Improper use by other than specially trained technicians is extremely dangerous and may result in a fire or electric shock.

This machine should not be placed outdoors or exposed to rain.

Connect to drinking water mains.

This appliance is not intended for use by young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.

IMPORTANT!

- **DO NOT ATTEMPT TO SERVICE THIS MACHINE AS IT IS DANGEROUS AND COULD CAUSE SEVERE DAMAGE TO THE UNIT.**
- **SERVICE SHOULD ONLY BE CARRIED OUT BY TRAINED, QUALIFIED PERSONNEL.**
- **WE STRONGLY RECOMMEND USING ONLY ORIGINAL REPLACEMENT PARTS AVAILABLE FROM AN AUTHORIZED DISTRIBUTOR.**
- **WASTE AND OTHER MATERIAL SHOULD BE DISPOSED OF ACCORDING TO LOCAL REGULATIONS AND PROCEDURES FOR WASTE DISPOSAL.**
- **CLEANING AND MAINTENANCE ARE NOT COVERED BY THE WARRANTY.**

1.2. Description

The ice cube maker is the result of years of experience in this field and the development of a high technology factory.

Main Features:

- Storage bin made of polyester strengthened with glass fibre or ABS
- Stock bin made of high resistance plastic materials
- Polyurethane insulation injected "IN SITU"
- Heavy-duty door (pat.) except 22-32.
- Agitator motor for continuous service
- Tough cam motor (50 Kg/cm)
- Safety device and clutch for the water pan preventing its breakage during the upward cycle, (pat.)
- Machine stoppage and water pan protection during the downward cycle, (pat.)
- The stock ice is the maximum than it could be thanks to the stop machine system.
- Low noise
- High pressure safety switches even in air-cooled machine.
- Large condensers (work well at high ambient temperatures and reduce cooling water consumption in water-cooled machines)
- Clear cubes
- Ice Cube size can be adjusted (height and diameter).
- Easy to maintain and repair.

1.3. Operating principle

When the machine is switched on the compressor and the agitator motor start, the water entry valve opens and allows water into the production pan up to a level where the float makes a micro-switch cut the current to the valve and so stop water entering the tray. The compressor, controlled by capillaries produces enough cold in the evaporator to gradually freeze the water around its "fingers".

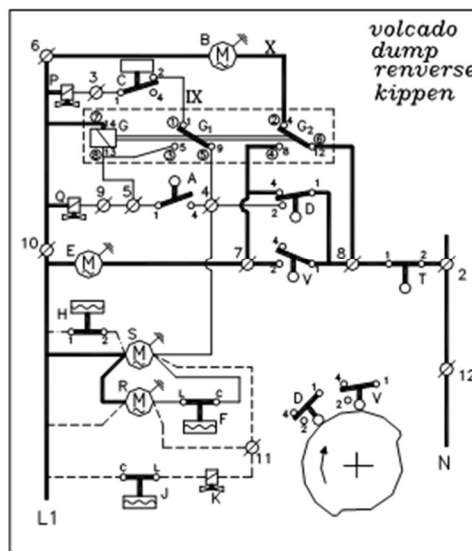
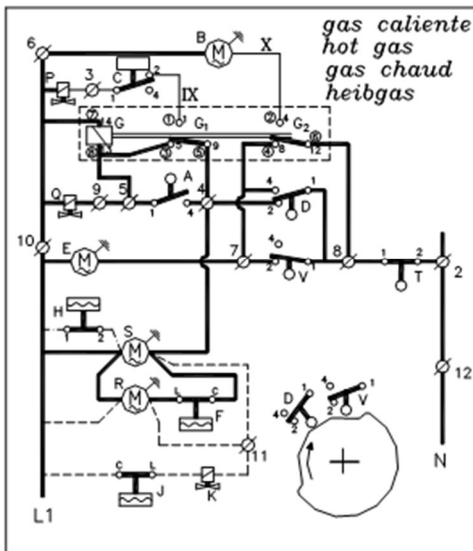
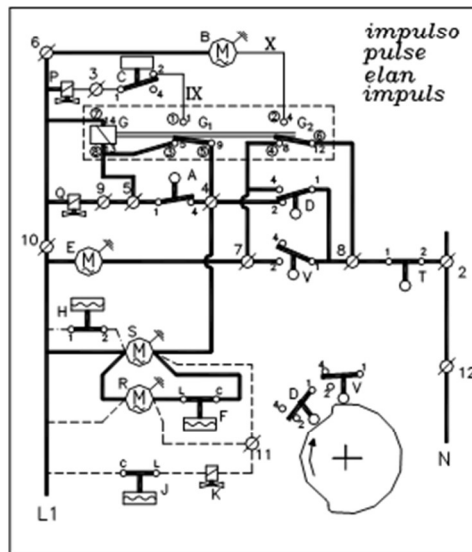
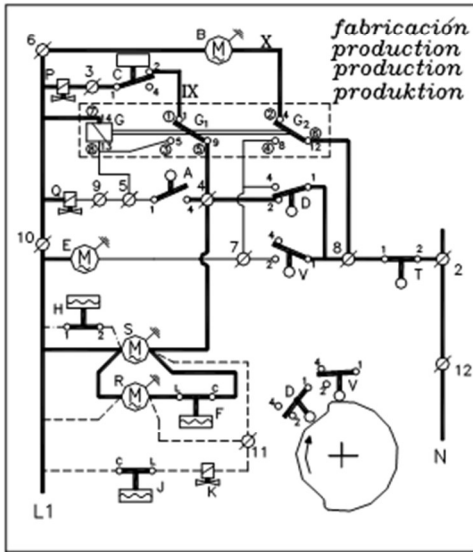
When the ice so formed reaches the proper size the paddles of the agitator are stopped and its motor suspended, works the end of cycle micro-switch. This micro-switch connects the relay that starts the cam motor. When the micro-switch has fallen, opens the hot gas valve and stops

the agitator motor. The compressor continues working for another 20", then stops and the agitator motor is connected. The cam motor starts to move downwards, making part of the surplus water flow to the drain and dropping the ice cubes, pushed by the eject plate into the storage bin.

The pan eventually gets back to its initial position and so starts another production cycle.

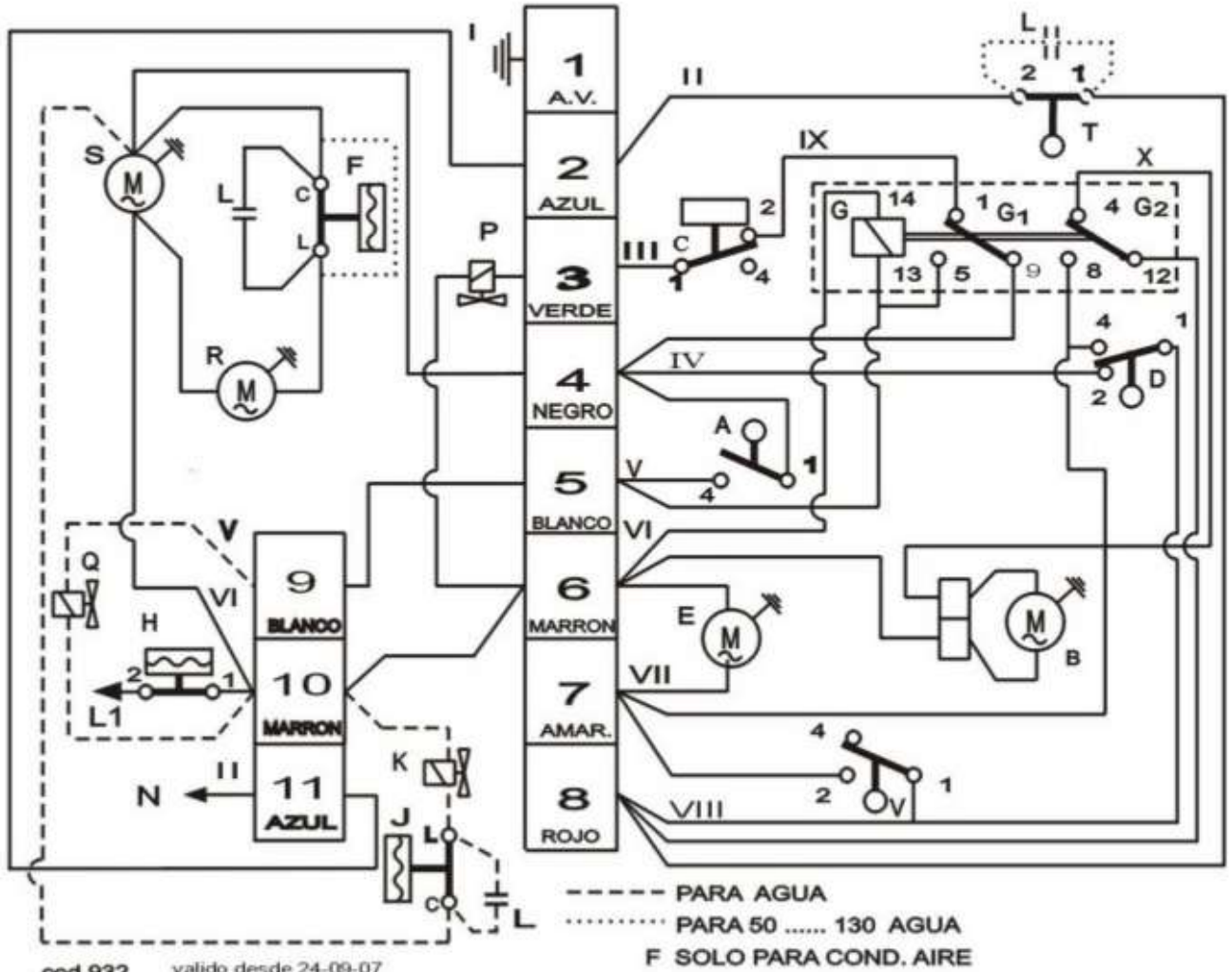
Once the storage bin is full the pan stops in its downward movement as it touches the cubes, so working the safety stop micro-switch and switching off the machine. Production will start again as soon as the cubes which detained it move or are removed.

fases de funcionamiento
 working stages
 phases de fonctionnement
 arbeitsspiel



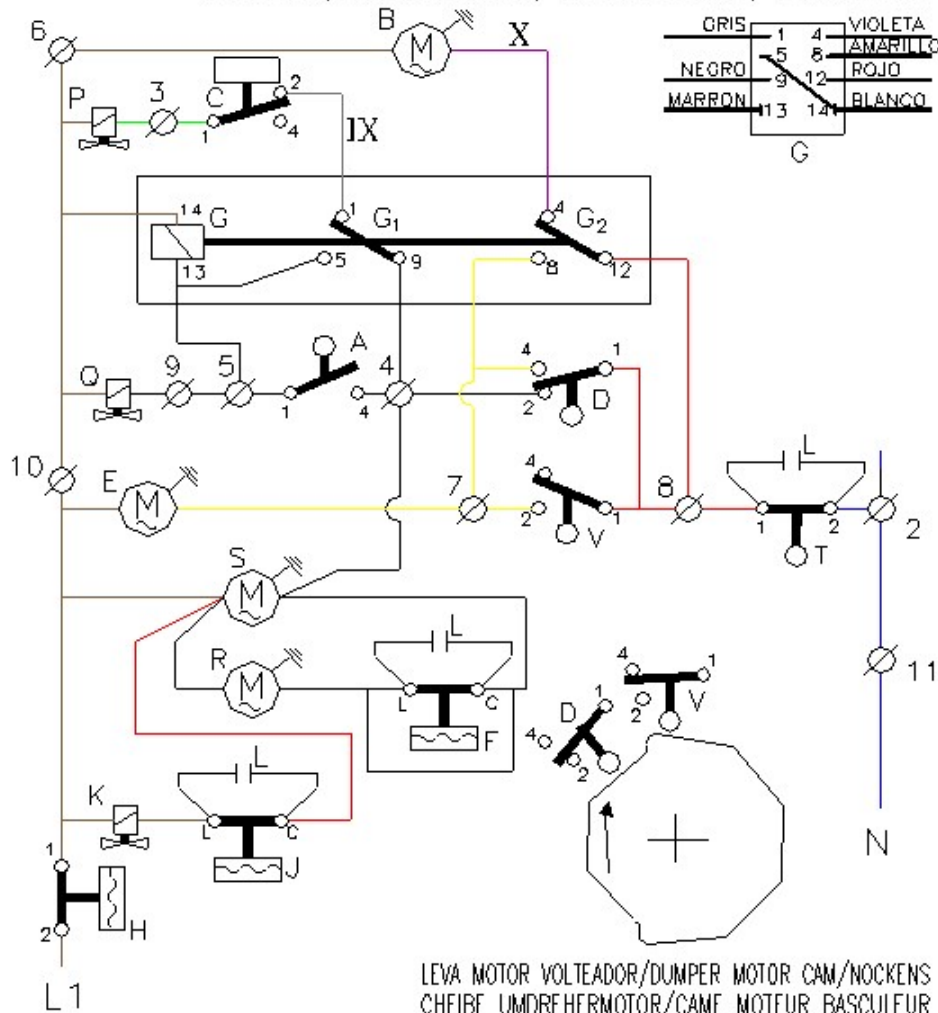
ESQUEMAS ELECTRICOS / ELECTRIC DIAGRAM
 ELEKTRISCHER SCHALTPLAN / SCHEMAS ELECTRIQUES

PRACTICO / PRACTICAL / PRAKTISCH / PRACTIQUE



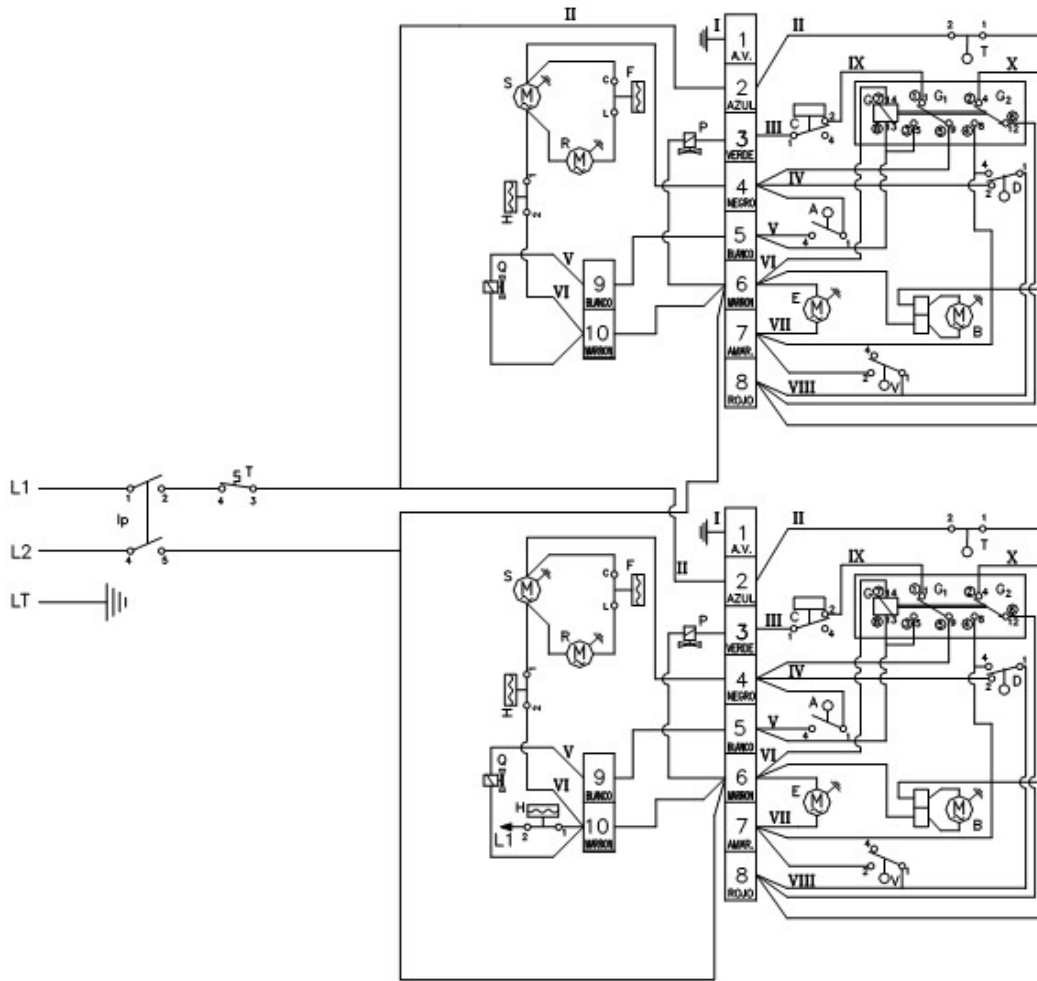
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TEORICO/THEORETICAL/THEORETISCH/THEORIQUE



COMPONENTS	COLORS
A. MICRO JOG	I. YELLOW - GREEN
B. AGITADOR MOTOR	II. BLUE
C. MICRO FLOAT	III. GREEN
D. MICRO TURNING TRAY	IV. BLACK
E. TURNING MOTOR TRAY	V. WHITE
F. FAN PRESSURE SWITCH (ONLY AIR)	VI. BROWN
G. RELAY	VII. YELLOW
P. WATER ELECTROVALVE	VIII. RED
Q. HOT GAS ELECTROVALVE	IX. GREY
R. VENTILADOR MOTOR	X. VIOLET
S. COMPRESSOR	VALID SINCE 07/11/2003
T. MACHINE MICRO STOP	
V. SAFETY MICRO TURNING	
H. SAFETY PRESSURE SWITCH	
J. CONDENSATION PRESSURE SWITCH (ONLY WATER)	
L. COND. FILTER	

ESQUEMAS ELECTRICOS / ELECTRIC DIAGRAM
ELEKTRISCHER SCHALTPLAN / SCHEMAS ELECTRIQUES



COLORES

I	AMARILLO-VERDE
II	AZUL
III	VERDE
IV	NEGRO
V	BLANCO
VI	MARRON
VII	AMARILLO
VIII	ROJO
IX	GRIS
X	VIOLETA

COLOURS

I	YELLOW-GREEN
II	BLUE
III	GREEN
IV	BLACK
V	WHITE
VI	BROWN
VII	YELLOW
VIII	RED
IX	GREY
X	VIOLET

FARBE

I	GELB-GRÜN
II	BLAU
III	GRÜN
IV	SCHWARZ
V	WEIß
VI	BRAUN
VII	GELB
VIII	ROT
IX	GRAU
X	VEILCHEN

COULEURS

I	JAUNE-VERT
II	BLEU
III	VERT
IV	NOIR
V	BLANC
VI	MARRON
VII	JAUNE
VIII	ROUGE
IX	GRIS
X	VIOLET

COMPONENTES

A	MICRO IMPULSO
B	MOTOR AGITADOR
C	MICRO FLOTADOR
D	MICRO VOLTEADOR BANDEJA
E	MOTOR VOLTEADOR BANDEJA
F	PRESOSTATO VENTILADOR(SOLO AIRE)
G	RELE
P	ELECTROVALVULA AGUA
Q	ELECTROVALVULA GAS CALIENTE
R	MOTOR VENTILADOR
S	COMPRESOR
T	MICRO PARADA MAQUINA
V	MICRO SEGURIDAD VOLTEADOR
H	PRESOSTATO DE SEGURIDAD(SOLO AGUA)
J	PRESOSTATO CONDENSACION(Q20=34 AGUA)
K	ELECTROV.CONDENSACION(Q20=34 AGUA)
L	COND.FILTRO

COMPONENTS

A	DRIVE MICRO-SWITCH
B	PADDLE MOTOR
C	FLOAT MICRO-SWITCH
D	PAN CAM MICRO-SWITCH
E	PAN CAM MOTOR
F	FAN PRESOSTAT (AIR)
G	RELAY
P	WATER ELECTROVALVE
Q	HOT GAS ELECTROVALVE
R	FAN MOTOR
S	COMPRESSOR
T	MACHINE STOP MICRO-SWITCH
V	CAM SAFETY MICRO-SWITCH
H	SAFETY PRESOSTAT (WATER)
J	CONDENSATION PRESOSTAT(Q20=34 WATER)
K	CONDENSATION ELECTROVALVE(Q20=34 WATER)
L	RADIO DISTURB.CONDENSER

EINZELTEILE

A	IMPULS SCHALTER
B	VIBRATIONSMOTOR
C	SCHWIMMER-SCHALTER
D	UMDREHER-SCHALTER
E	UMDREHER-MOTOR
F	DRUCKSCHALTER FÜR KONDENSATORLUFT(LUFT)
G	RELAIS
P	WASSER VENTIL
Q	GAS VENTIL
R	VENTILATORMOTOR
S	KOMPRESSOR
T	AUS-SCHALTER
V	SICHERHEITSSCHALTER-UMDREHER
H	SICHERHEITSPRESOSTAT(WASSER)
J	PRESOSTAT-KONDENSATOR(Q20=34 WASSER)
K	DREIWEGEVENTIL(Q20=34 WASSER)
L	FUNK-INTERFERENZ KONDENSATOR

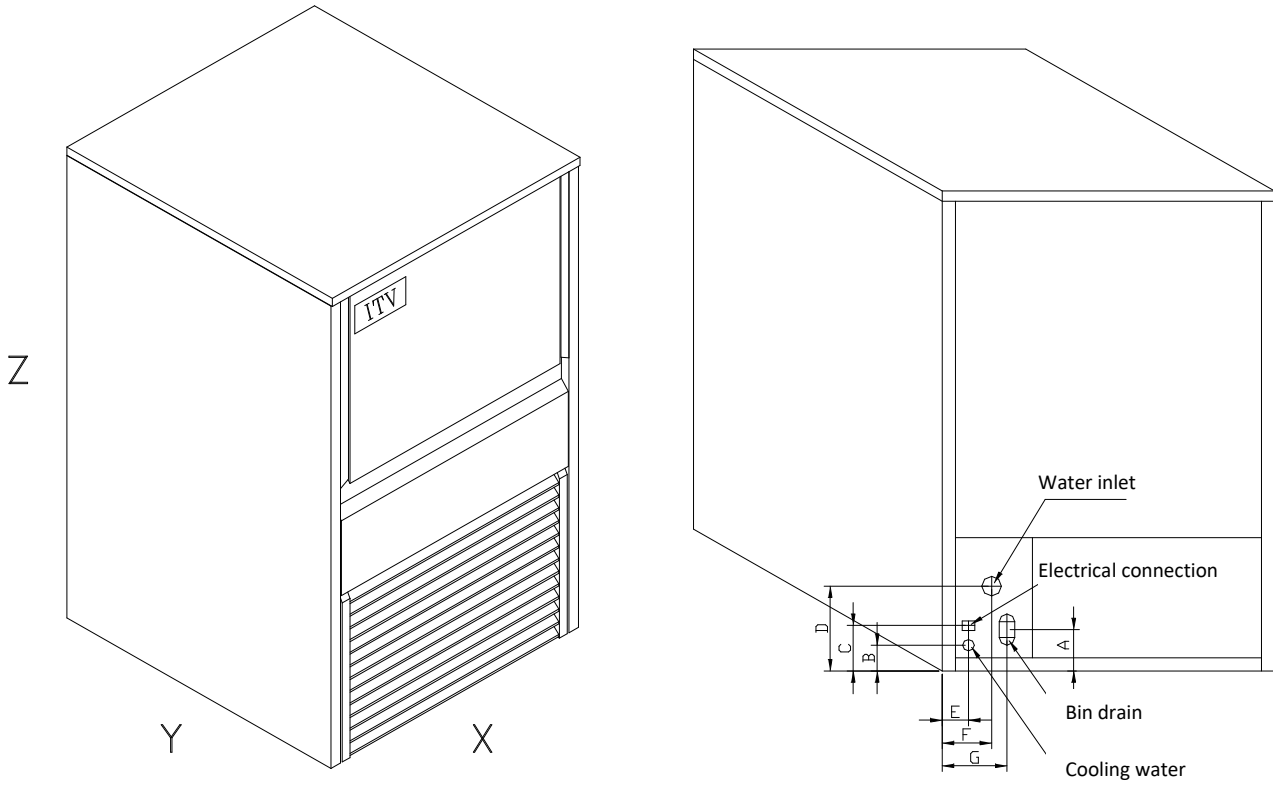
COMPOSANTS

A	MICRO-D'IMPULSION
B	MOTEUR AGITATEUR
C	MICRO-FLOTTEUR
D	MICRO-COMMANDE BASCULE
E	MOTEUR BASCULEUR
F	PRESOSTAT VENTILATION (AIR)
G	RELAIS
P	ELECTROVANNE EAU
Q	ELECTROVANNE GAS CHAUD
R	MOTEUR VENTILATEUR
S	COMPRESSEUR
T	MICRO-ARRÊT
V	MICRO-SECURITE
H	PRESOSTAT DE SECURITE (EAU)
J	PRESOSTAT CONDENSATION(Q20-34 EAU)
K	ELECTROVANNE CONDENSATION(Q20-34 EAU)
L	CONDENSATEUR ANTI-INTERFER.

2. SPECIFICATIONS

2.1. Diagrams of connections and dimensions (under counter models)

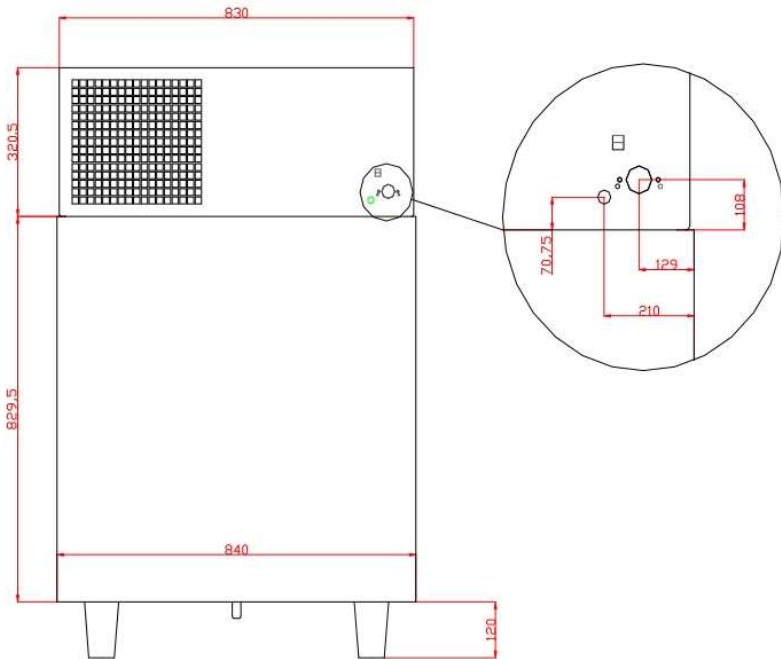
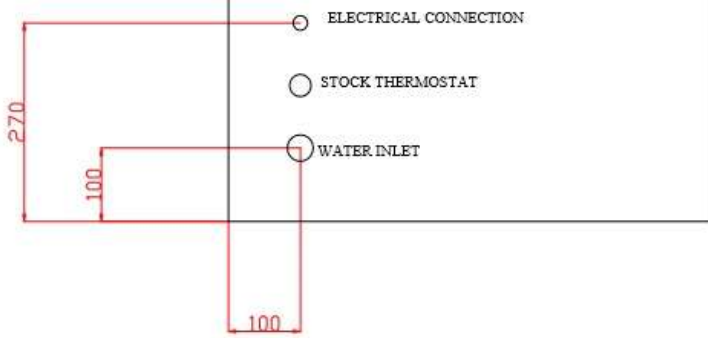
Model: FIM-C



* HEIGHT Z REPRESENTS MINIMUM MACHINE HEIGHT. IF LEGS ARE PLACED UNDER MACHINE, IT INCREASES 80 MM.*

MODEL	X	Y	Z	A	B	C	D	E	F	G
FIM 20C	405	510	690	60	35	65	123	45	65	105
FIM 30C	405	510	745	60	35	65	123	45	65	105
FIM 40C	405	510	870	60	35	65	123	45	65	105
FIM 60C	595	555	995	60	42	74	123	65	75	105
FIM 90C	675	555	995	60	42	74	123	65	75	105
FIM 130C	845	555	995	60	42	74	123	65	75	105

MODULAR QUASAR 200 BACK



2.2. Consumption data, weights, crated dimensions and volumes

MODEL	COOLING WATER USAGE L/HOUR (1)	ICE PRODUCTION WATER USAGE L/HOUR (1)	TOTAL WATER USAGE L/HOUR (1)	NET WEIGHT (KG)	DIMENSIONS CRATED X*Y*Z	GROSS WEIGHT (KG)	VOLUME (M ³)
FIM 20C A		4	4	36	490x595x765	41	0.22
FIM 20C W	15	4	19	36	490x595x765	41	0.22
FIM 30C A		4	4	39	490x595x830	44	0.24
FIM 30C W	15	4	19	39	490x595x830	44	0.24
FIM 40C A		5	5	42	490x595x960	46	0.28
FIM 40C W	25	5	30	42	490x595x960	46	0.28
FIM 60C A		6	6	55	690x640x1080	66	0.47
FIM 60C W	35	6	41	55	690x640x1080	66	0.47
FIM 80C A		11	11	60	770x640x1080	74	0.53
FIM 80C W	45	11	68	60	770x640x1080	74	0.53
FIM 130C A		11	11	80	940x640x1080	95	0.65
FIM 130C W	53	11	64	80	940x640x1080	95	0.65
MFIM 200C A		11	11	98	900x600x1200	113	0.702
MFIM 200C W	70	11	81	98	900x600x1200	113	0.702

MODEL	REFRIG. CHARGE (GR)	HIGH PRESSURE				LOW PRESSURE		TOTAL INTENS (2) (A)	FUSES (A)	COMPRESS OR OUTPUT (1) (W)	TOTAL OUTPUT (2) (W)
		MINIMUM		MAXIMUM		AVERAGE					
		Kg/c m ²	Psi	Kg/c m ²	Psi	Kg/c m ²	Psi				
FIM 20C A	260	16	228	17	240	2.5	38	1.5	10	175	220
FIM 20C W	190	16	228	17	240	2.5	38	1.5	10	175	220
FIM 30C A	260	16	228	17	240	2.5	38	1.5	10	190	220
FIM 30C W	190	16	228	17	240	2.5	38	1.5	10	190	220
FIM 40C A	270	16	228	17	240	2.5	38	1.7	10	190	270
FIM 40C W	205/195	16	228	17	240	2.5	38	1.7	10	190	270
FIM 60C A	370/390	16	228	17	240	2.5	38	2.2	10	210	310
FIM 60C W	370	16	228	17	240	2.5	38	2.2	10	210	310
FIM 80C A	370/380	16	228	17	240	2.5	38	2.8	10	365	450
FIM 80C W	360	16	228	17	240	2.5	38	2.8	10	365	450
FIM 130C A	425	16	228	17	240	2.5	38	3	10	440	500
FIM 130C W	425	16	228	17	240	2.5	38	3	10	440	500
MFIM 200C A	400	16	228	17	240	2.5	38	6	10	440	1000
MFIM 200C W	340	16	228	17	240	2.5	38	6	10	440	1000

(1) Data obtained at 20° C room temperature and 15°C water temperature (water quality = 500 ppm)

(2) Maximum consumption obtained at 43°C room temperature, according to UNE climate classification Class T (Tropicalized)

NOTE: Expansion controlled by capillary.

2.3. Production tables for Ice Cuber Makers (KG/DAY)

FIM 20C

R O O M T E M P E R A T U R E °C	45	25 22	27 20	28 19.5	29 19	30 18	30 17	32 16
	40	24 24	25 22	27 20	28 19.5	29 19	30 18	31 17
	35	22 25	24 24	25 22	27 20	28 19.5	29 19	30 18
	30	20 26	22 25	24 24	25 22	27 20	28 19	29 19
	25	19 28	20 26	22 25	23 24	25 22	27 20	28 19.5
	20	18 30	19 28	20 26	22 25	23 24	25 22	27 20
	15	17 31	18 30	19 28	20 26	22 25	23 24	25 22
	10	16 32	17 31	18 30	19 28	20 26	22 25	23 23
		5	10	15	20	25	30	35

FIM 30C

45	25 26	27 24	28 23	29 22	30 21	30 20	32 19
40	24 28	25 26	27 24	28 23	29 22	30 21	31 20
35	22 29	24 28	25 26	27 24	28 23	29 22	30 21
30	20 31	22 29	24 28	25 26	27 24	28 23	29 22
25	19 33	20 31	22 29	23 28	25 26	27 24	28 23
20	18 35	19 33	20.4 31	22 29	23 28	25 26	27 24
15	17 37	18 35	19 33	20 30	22 29	23 28	25 26
10	16 38	17 37	18 35	19 33	20 30	22 29	23 27

	5	10	15	20	25	30	35
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FIM 40C

R O O M T E M P E R A T U R E °C	45	25 35	26 33	28 32	29 31	30 30	30 29	32 27
	40	24 37	25 35	26 33	28 32	29 31	30 30	30 29
	35	22 38	24 37	25 35	26 33	28 32	29 31	30 30
	30	21 40	22 38	24 37	25 35	26 33	28 32	29 31
	25	20 42	21 40	22 38	24 37	25 35	26 33	28 32
	20	19 44	20 42	21 40	22 38	24 37	25 35	26 33
	15	18 45	19 44	20 42	21 40	22 38	24 37	25 35
	10	17 47	18 45	19 44	20 42	21 40	22 38	24 37
		5	10	15	20	25	30	35

FIM 60C

R O O M T E M P E R A T U R E °C	45	25 41	26 39	27 38	28 36	29 35	30 34	31 33
	40	24 43	25 41	26 39	27 38	28 36	29 35	30 34
	35	22 46	24 43	25 41	26 39	27 38	28 36	29 35
	30	20 51	22 46	24 43	25 41	26 39	27 38	28 36
	25	19 54	20 51	22 46	24 43	25 41	26 39	27 38
	20	18 57	19 54	20 51	22 46	24 43	25 41	26 39
	15	17 60	18 57	19 54	20 51	22 46	24 43	25 41
	10	16	17	18	19	20	22	24

	64	60	57	54	51	46	43
	5	10	15	20	25	30	35

FIM 80C

45	24 71	26 66	28 61	29 59	30 57	31 55	32 53
40	23 74	24 71	26 66	28 61	29 59	30 57	31 55
35	22 77	23 74	24 71	26 66	28 61	29 59	30 57
30	21 83	22 77	23 74	24 71	26 66	28 61	29 59
25	20 85	21 83	22 77	23 74	24 71	26 66	28 61
20	19 90	20 85	21 83	22 77	23 74	24 71	26 66
15	18 95	19 90	20 85	21 83	22 77	23 74	23 71
10	17 97	18 95	19 90	20 85	21 83	22 77	223 74
	5	10	15	20	25	30	35

FIM 130C

45	24 99	26 92	28 85	29 81	30 79	31 77	32 74
40	23 103	24 99	26 92	28 85	29 81	30 79	31 77
35	22 108	23 103	24 99	26 92	28 85	29 81	30 79
30	21 114	22 108	23 103	24 99	26 92	28 85	29 81
25	20 119	21 114	22 108	23 103	24 99	26 92	28 85
20	19 125	20 119	21 114	22 108	23 103	24 99	26 92
15	18	19	20	21	22	23	24

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°C**

	132	125	119	114	108	103	99
10	17	18	19	20	21	22	23
	136	132	125	119	114	108	103
	5	10	15	20	25	30	35

WATER TEMPERATURE (°C)
500 ppm water quality (240 Micromh/cm)

3. DELIVERY & UNPACKING

Upon receipt, thoroughly inspect the packing container. If there appears to be damage to the container contact the shipper immediately. Unpack unit in the presence of delivery personnel noting any damage on the waybill.

Our company packing bears the “Green Point” on all models according to the European Directives on management of Packaging and Waste Disposal.

Be sure to include model name and serial number on all claims. Serial number is located in the following three places:

(1) Packing

There is a label stick onto the cardboard packing bearing this serial number (1).

(2) Machine body

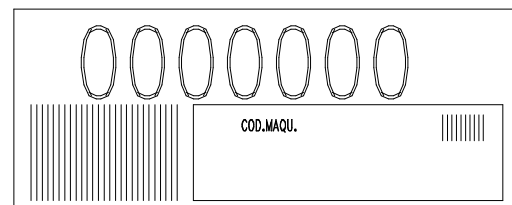
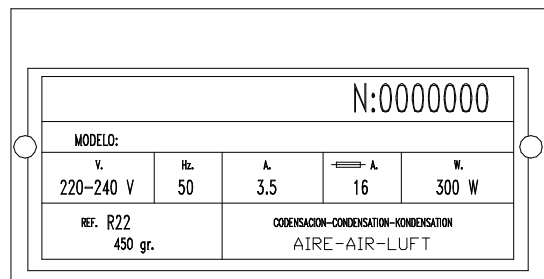
On the machine’s rear panel (1).

(3) Rating plate and serial number

Located at the back of the machine.

Water cooled machines: check that the drainage hose at the back of the machine is in good condition.

Verify that the installation kit is inside the bin, and has the following pieces: scoop, 3/4’ water hose, two small filters and user manual.



WARNING: DO NOT LEAVE PACKING MATERIALS (PLASTIC BAGS, CARDBOARD BOXES, ETC..) WITHIN REACH OF CHILDREN.

4. INSTALLATION

The ice cube maker is delivered on a small wooden pallet and is protected with a cardboard box and packaging. Loosen the cardboard box by cutting the straps, then lift vertically.

After having removed the packaging, make sure the machine is complete. If in doubt do not use it and go to the distributor who sold it to you.

This operation has to be performed with the wooden base structure firmly placed on the ground. All packaging elements (plastic bags, cartons, etc..) must not be left at children's reach, since they are a potential source of danger.

Place the machine where it is to be installed, and verify, using a level control, that the machine is in a horizontal position.

CAUTION:

If the gap between the back of the machine and the wall of the room/bar is not sufficient, or if it is going to receive hot air from another machine, we strongly advise, in case of not being able to change the location of the machine, to INSTALL A WATER-COOLED MACHINE.

Bear in mind the previous considerations if the premises where the machines is located are very dusty, or smoky. If possible make arrangements so that the machine may be moved front-wise in order to carry out maintenance.

Recommended Placement of Unit

FIM-C machines are intended to operate at room temperature between 5°C and 43°C and with water temperature ranging between 5°C and 35°C. Below recommended minimum temperatures, ice cubes will be un-stick correctly and may form a slab or block of ice. Operation carried out over maximum recommended temperatures can result in shorter compressor life and decreased production.

Air-cooled units receive air input via front of machine and expel air through rear grill.

IMPORTANT!

If front and/or rear ventilation is inadequate, obstructed, or in close proximity to other heat producing machinery, USE OF A WATER-COOLED UNIT is strongly recommended.

Water inlet tube should not pass near heat sources: water entering the machine should be as cold as possible, but always above 5°C.

The above mentioned also applies should unit be installed in an area where dust, smoke, or other airborne pollutants may be present. Units—especially air-cooled—should not be installed in kitchens. To facilitate access to condenser and/or water pressure valve, allow sufficient space at front of the machine. Be sure that flooring is firm and even.

4.1. Water and Drainage

Water quality influences ice hardness, flavour, and quality as well as condenser life.

Keep in mind the following points:

a) **WATER IMPURITIES:** Major impurities are eliminated by filters provided. Filters should be cleaned regularly depending on purity of water. For minor impurities we recommend installing a 5-micron filter. (Provided with the unit: Part # 7499).

b) **WATER WITH MORE THAN 500 PPM:** Ice will be less hard and tend to adhere. Lime deposits may impede proper function. In water cooled models, condenser obstruction is likely. Installation of a high quality water softener is recommended. (Code 7500).

a) c) **CHLORINATED WATER:** Chlorine taste can be avoided by installing a carbon filter (Code 7509).

(NOTE: You may encounter water with ALL aforementioned properties.)

d) **PURIFIED WATER:** A 10% reduction in overall production may occur.

4.2. Connecting unit to water source (water-cooler units)

- Use 1.3 m. flexible tube (with the two filters attached) provided. NOTE: We advise using a single faucet fixture.
- Water pressure should be between 0.7 and 6 Kgs/cm². (10/85 Psi.)
- If water pressure exceeds these values, installation of appropriate corrective units will be necessary.
- It is important that water tubing does not come close to or in contact with any heat sources or heat generated by unit as this could decrease production.

4.3. Connecting unit to drain (water-cooled models)

- Drain must be located at least 150mm below machine level. Drain tube must have an inner diameter of 30mm and a minimum gradient of 3 cm per metre.(3%)

4.4. Electrical connection

- Unit is provided with a 1.5 m cord and Schucko socket.
- It is recommended to install a switch and adequate fuses. Nominal voltage and intensity are indicated on rating plate as well as on this manual. Voltage fluctuations greater than 10% can cause problems or prevent machine from starting.
- Line to base of plug must have a minimum 12/10 section in the small models and 25/10 in the big ones.
- Be sure that voltage indicated on rating plate corresponds to that of mains supply.

IMPORTANT!

Supply socket must be properly earthed. Be sure to check standard for country where appliance is going to be installed.

4.5. We recommend

Levelling

Place machine where it is required and level it ONCE all four legs have been fixed.

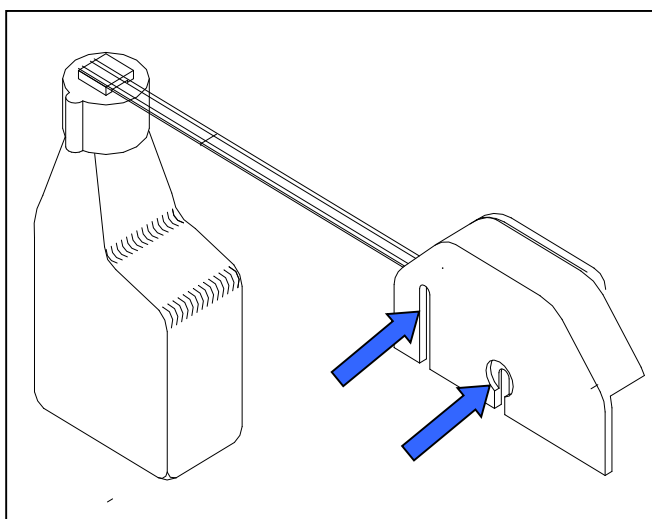
Space requirements

There should be a 150 mm gap on sides and top of the machine so as to allow air to circulate and prevent heat build-up.

Float valve level

This valve is factory set, but may need to be adjusted if mains water pressure is very high or very low. To do so, loosen the two small screws which connect the micro-switch to the steel support. Move micro-switch as required and tighten screws. Water level must be about 5 mm below the evaporator coil to, otherwise there may be difficulty in releasing cubes in winter.

Note that if mains pressure is subject to large fluctuations, it will be difficult to maintain a constant water level, in this case it may be advisable to install a pressure regulator on the water mains line.



5. OPERATION

5.1. Preliminary checks

- a) Is the machine levelled?
- b) Are voltage and frequency of mains supply the same as indicated on rating plate?
- c) Is drainage system working properly?
- d) Is air circulation and room temperature adequate? (Air-cooled models)

AMBIENT TEMPERATURE

WATER TEMPERATURE

MAXIMUM	43° C	35° C
MINIMUM	5° C	5° C

- e) Is water pressure adequate?

MAXIMUM	0.7 Kg/cm ²
MINIMUM	6 Kg/cm ²

ATTENTION: Check that voltage and mains frequency is the same as in the rating plate.

5.2. Starting up

Once preliminary check has been completed (ventilation, connections, temperature, etc.), proceed as follows:

1. Open water faucet. Check for leaks.
2. Plug machine into electricity mains supply.
3. Ensure that there are no strange vibrations or scraping sounds
4. Check that the water curtain moves freely.
5. At the cycle's end, there should be frost formed on the compressor inlet tube except for the last 50 mm.

IMPORTANT!

ADVISE THE FINAL USER ON MAINTENANCE PROCEDURES WHICH ARE NOT INCLUDED IN WARRANTY, AS WELL AS THOSE BREAKDOWNS CAUSED BY NEGLIGENCE OF PROPER MAINTENANCE PROCEDURES.

6. ADJUSTMENTS

6.1. Condenser water valve pressure switch

WATER COOLED MACHINES - (UP TO FIM 30C WATER COOLED)

This pressure switch controls high pressure by opening and closing the condenser water valve. Differential is a fixed 1 kg/cm² (14 Psi). The valve closes at 16 Kg/cm² (228 Psi.) which is equivalent to a water exit temperature of 38°C below this pressure it will be difficult to unstuck the cubes at the defrosting stage.

Above this pressure, compressor life and ice production are both reduced. Pressure can be increased by turning the small screw clockwise. A full turn is equivalent to about 1.5 kg/cm².

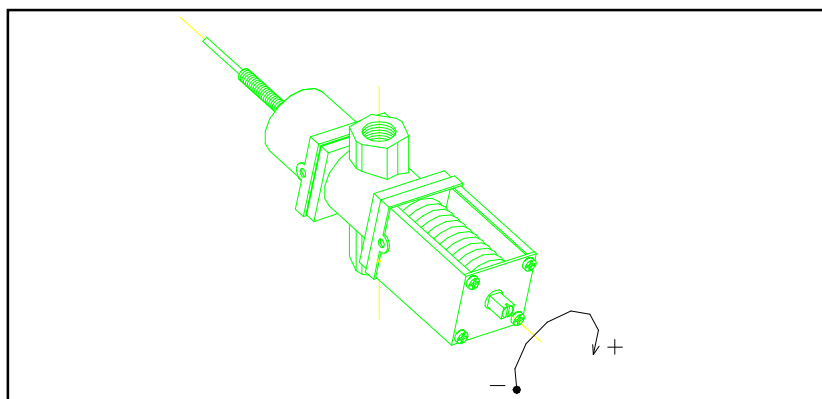
Water Pressure Control Valve

(FROM FIM 40C WATER COOLED)

High pressure should be maintained at 16-17 bar (228-240 Psi) must be maintained which corresponds to a water temperature of 40°C (exit temperature).

When temperature exceeds 32°C, pressure and temperature of water at exit increases.

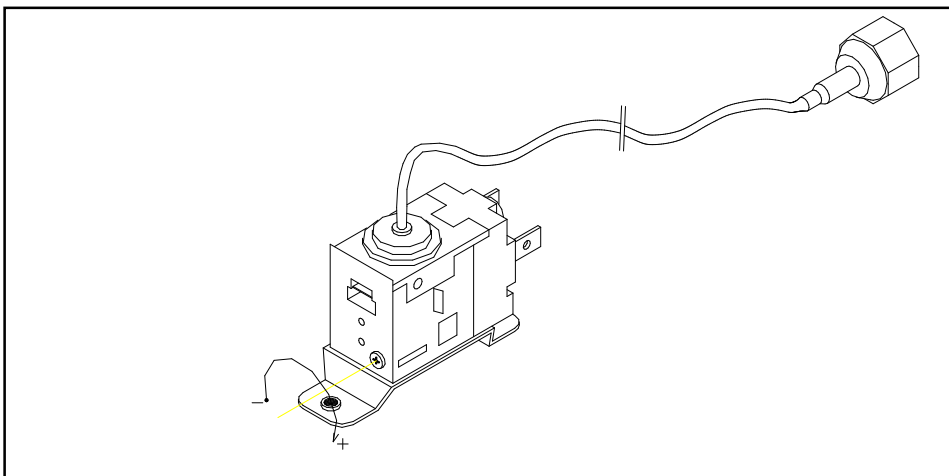
ADJUSTMENT: Water pressure and temperature can be decreased by regulating screw clockwise.



6.2. Fan pressure switch (air-cooled models)

Pressure control operates on high pressure by starting and/stopping fan. Differential is fixed (1Kg/cm² or 14 Psi). Cut-off pressure must be 16 kg/cm² (228 Psi) . Low pressure values may cause gearbox malfunction. Pressure values higher than 16 kg/cm² may shorten compressor life and diminish ice production.

Pressure can be regulated by rotating screw on Pressure Control Valve (clockwise to increase pressure). One rotation equals 1.5 Kg/cm².



6.3. Safety pressure switch

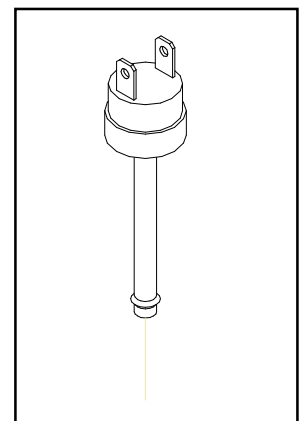
ALL MACHINES

This Security device trips when discharge pressure is too high. Pressure might exceed the limit when:

- a) Dirty condenser, bad air circulation or too high room temperature (air cooled models)
- b) Lack of water or too high water temperature (water cooled models).

HIGH PRESSURE REGULATION (fixed)

30-22 kg./cm² (420-308 Psi.)



7. MAINTENANCE AND CLEANING INSTRUCTIONS

IMPORTANT!

**Maintenance and cleaning procedures as well as problems derived from failing to carry them out are not covered by the warranty.

Proper maintenance is essential to obtain favourable ice quality and optimum functioning of unit. Frequency depends on water quality and characteristics of room where unit is installed.

** Maintenance/cleaning procedures should take place at least once every six months. If concentration of air pollutants is high, complete procedures on a monthly basis.

MAINTENANCE TABLE:

PROCEDURE	MONTHLY	QUARTERLY	HALF YEARLY	YEARLY	BIENNIAL	DURATION
Air condenser cleaning	Yellow	Yellow	Red	Red	Red	30 minutes
Water condenser cleaning				Blue	Red	90 minutes
Inyectors cleaning		Blue	Blue	Red	Red	30 minutes
Fabrication head filter cleaning		Blue	Blue	Red	Red	30 minutes
Water circuit cleaning		Blue	Blue	Red	Red	45 minutes
Sanitary cleaning		Blue	Blue	Red	Red	30 minutes
Water filter cleaning/replacement	Blue	Blue	Red	Red	Red	30 minutes
Gearbox cleaning	Green	Green	Green	Green	Green	--
General unit cleaning	Green	Green	Green	Green	Green	--

- Depending on room characteristics
- Depending on water quality
- Carried out by owner
- Essential**

MAINTENANCE AND CLEANING PROCEDURES AS WELL AS PROBLEMS DERIVED FROM FAILING TO CARRY THEM OUT ARE NOT COVERED BY THE WARRANTY.

Service personnel will invoice you for travel expenses, time invested and materials required for maintenance and cleaning of unit.

8. MAINTENANCE AND CLEANING PROCEDURES

WARNING: Unit should always be disconnected during maintenance/cleaning procedures.

Water Condenser

- 1) Disconnect machine.
- 2) Close water faucet.
- 3) Disconnect water entry/exit from condenser.
- 4) Prepare a solution of 50% phosphoric acid in distilled water.
- 5) Distribute solution through condenser. (Solution is more effective at 35°-40°C).

WARNING!

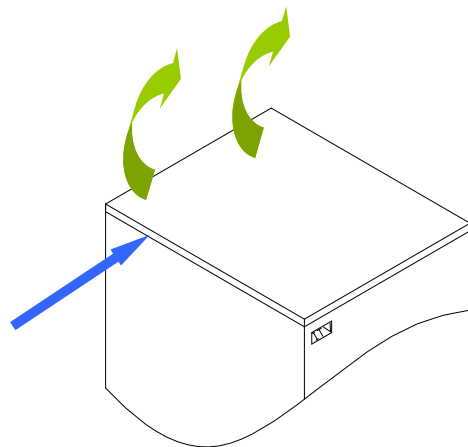
DO NOT USE HYDROCHLORIC ACID.

Air Condenser

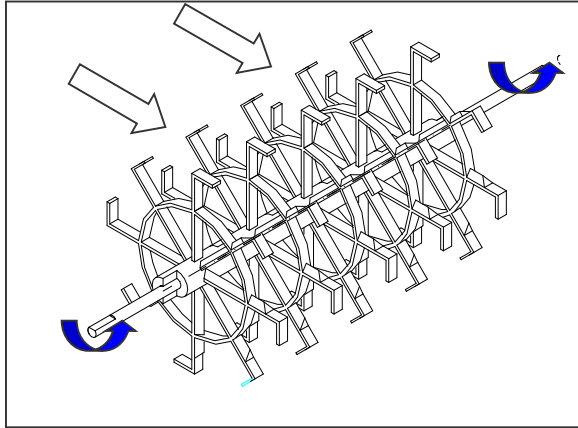
- 1) Disconnect machine.
- 2) Close water faucet.
- 3) Clean condenser using a vacuum cleaner, soft brush and/or low-pressure air.

Removing scale (lime) from ice production mechanism

- 1) Close the water inlet faucet.
- 2) Remove lid from top lid from top of machine by pulling upwards from the rear part of the lid.
Some force is required for this it may be better to prise it open with a flat screwdriver.



- 3) Hold agitator paddles so that water pan releases water.



- 4) Once the water pan returns to its horizontal position again, switch off the machine. Pour 3 litres of water and one half of di-caloid (cleaner) into water pan.
- 5) Allow the solution to work for 20 or 30 minutes, occasionally turning the paddles by hand so that they are also cleaned.
- 6) Turn on the machine and hold paddles so that pan releases water.
- 7) Open the water inlet faucet and allow the water pan to fill with water.
- 8) Dissolve a spoonful of sodium bicarbonate in a glass of water, then pour solution into water tray. Wait 5 minutes.
- 9) Repeat (6) several times until water pan has been thoroughly rinsed.

WARNING: ** Discard ice produced during cleaning procedure.

Cleaning the ice bin.

- 1) Unplug the machine, turn off water supply and empty storage bin of ice.
- 2) Wipe with a kitchen cloth soaked in bleach and detergent.
- 3) If White lime stains do not vanish, rub with some lemon or vinegar, wait for a few minutes and wipe with the cloth again.
- 4) Rinse with plenty of water, dry and run the machine.

Cleaning the outside of the machine

Follow the same procedure as for the ice bin.

Cleaning the water inlet filters

These round wire gasket filters placed on either end of the water hose to mains, often become blocked in the first few days of use, especially when the plumbing installation is new. Clean them under a jet of water.

Checking for water leaks

This must be done whenever maintenance is carried out on the machine: check all water connection, braces, tubes and hoses in order to eliminate leaks and prevent breakages and flooding.

Check that the valve closes tightly on models with an automatic cleaning system.

8.1. Special advise concerning R-404 Refrigerant

- Refills and drains should be carried out at the liquid parts (end of condenser or accumulator).
- When replacing a compressor, wash inside of circuit with a suitable solvent + pump, dry with nitrogen, REPLACE THE DRIER WITH ONE SUITABLE FOR R404a, which must also have ANTI-ACID properties.
- If you need to add oil in the circuit, use one specific for R404a (POE) . If you are in doubt, consult always the manufacturer.
- If there is a leak in the circuit where the R404a is in gas state and the amount to refill is above a 10% of the total load, ALL THE GAS OF THE CIRCUIT SHOULD BE PURGED AND PROCEED AGAIN WITH REFILL (ALWAYS LIQUID).
- If refilled through the low pressure valve, wait at least 1 hour tom over the compressor, in order to allow the liquid to pass to gas state.

9. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSES	SOLUTION
1) None of the electrics work.	A) The machine is not plugged in.	A) Plug the machine.
	B) The line fuse has blown.	B) Replace fuse.
	C) The current line is wrongly connected in the junction box.	C) Check connections.
	D) The cut off micro-switch is faulty or wrongly adjusted.	D) Check and adjust or replace.
2) All the electrics work except compressor	A) Loose wire.	A) Check connections.
	B) Dirty condenser.	B) Clean condenser.
	C) Faulty klixon.	C) Replace Klixon.
	D) Faulty compressor.	D) Replace compressor.
3) All the electrics work but the compressor "klixons" (cycles intermittently).	A) Voltage too low.	A) Check connections.
	B) Dirty condenser.	B) Clean condenser.
	C) Obstruction in air circulation	C) Move machine
	D) Broken Fan.	D) Replace compressor
	E) Faulty electrolitic condenser of compressor.	E) Replace.
	F) Fan pressure switch faulty or wrongly adjusted.	F) Adjust or replace pressure switch.
	G) Broken security pressostat	G) Replace
	H) Water PRESSOSTAT Valve wrongly adjusted or faulty.	H) Adjust or replace.
	I) Water condenser pressure switch wrongly adjusted or faulty.	I) Adjust or replace.
	J) Faulty water inlet valve.	J) Replace.
K) No condensable gases in the system.	K) Purge system and charge refrigerant.	
4) Everything appears to be running correctly but no ice made in the evaporator.	A) Inefficient cooling system . (Dirty condenser, faulty pressure switch or condensing water inlet valve or wrongly adjusted or lack of refrigerant)	A) Check system and components.
	B) Faulty hot gas valve (outlet pipe temperature could be an indication)	B) Replace hot gas valve.
5) Ice cube form correctly but do not unstick.	A) Hot gas valve does not open.	A) Check valve.
	B) The lower cam micro-switch is faulty or wrongly connected..	B) Replace micro or connect it correctly.
	C) Only in water condensed machines) Faulty pressure switch or it opens too much	C) Regulate water pressure switch to 40°C-43°C.
	D) Faulty pressure switch.	D) Check or adjust pressure switch.

PROBLEM	POSSIBLE CAUSES	SOLUTION
6) Low ice production.	A) Too high or too low water level in water pan.	A) Check water level. Observe the position of the float.
	B) Blocked condenser.	B) Clean condenser.
	C) Faulty fan pressure switch or condensing water inlet valve or adjusted too low .	C) Adjust or replace.
	D) Excessive or poor refrigerant load.	D) Adjust the load of refrigerant.
	E) Water inlet valve does not close and drips.	E) Check and replace if necessary.
	F) Humidity in the system.	F) Replace the drier, purge and refill.
	G) Inefficient Compressor.	G) Replace the compressor.
	H) Faulty water pan.	H) Check the water pan and replace if necessary.
7) A block of ice is formed in the tray	A) Faulty micro-switch of agitator motor.	A) Check micro-switch.
	B) Faulty agitator motor.	B) Check agitator motor.
	C) Loose unión bush pins.	C) Tighten pins.
	D) Cut flexible cable.	D) Replace.
8) The machine does not stop though the bin is full of cubes.	A) Faulty connecting rod micro-switch or in wrong position.	A) Check micro-switch. Position it correctly.
	B) Wrong pressure on this micro-switch spring.	B) Check spring pressure.
9) Cubes are formed normally for some cycles and then the evaporator stops cooling.	A) Humidity in the system.	A) Purge the installation heating the compressor and drier. Load the correct refrigerant.
	B) Foreign body blocking intermittently the capillary.	B) Remove the dehydrator, unblock capillary and replace with new dehydrator. Proceed again with purge and refill.
10) The tray remains in stop position although cubes after harvest cycle.	A) faulty connecting rod or in wrong position.	A) Replace or change position of micro-switch.
11) Water tray does not deliver ice cubes or remains in a middle position.	A) Cam motor disconnected or in bad condition.	A) Replace or connect cam motor.
	B) Flexible pin or broken cam wheel	B) ALWAYS change pin and wheel
12) Water tray goes up and down constantly.	A) Faulty or wrongly connected agitator motor micro-switch.	A) Connect or replace micro-switch.
	B) Faulty or wrongly connected security micro.	B) Connect or replace micro-switch.
	C) Faulty relais.	C) Replace relais.
13) The evaporator cools. There is no water in the water tray.	A) Water supply is closed.	A) Open water supply
	B) Blocked water supply.	B) Clean water entry filters
	C) Float wrongly positioned.	C) Adjust float
	D) Broken float micro-switch	D) Replace micro.
	E) Broken water inlet electrovalve.	E) Replace electrovalve.