ITV

PULSAR **(R404a)**

TECHNICAL SERVICE MANUAL

ICE CUBE MAKERS

MODELS:

PULSAR 15

PULSAR 25

PULSAR 35

PULSAR 45

PULSAR 65

PULSAR 85

PULSAR 145

MODULARS:

MP 145

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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INTRODUCTION

Thank you for choosing ITV's PULSAR ice cube maker.

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

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, CERTIFIED 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.

DESCRIPTION

Años de experiencia en este campo y la puesta a punto de una fábrica con alta tecnología, han dado como resultado el fabricador de hielo en cubitos PULSAR.

La carrocería, construida en acero inoxidable 18/8 en combinación con perfiles de aluminio anodizado color bronce, hacen del aparato uno de los de mejor diseño.

Otras características destacables son:

- cuba-stock de materiales plásticos de alta resistencia.
- aislamiento de poliuretano inyectado "in situ".
- puerta muy resistente provista de amortiguadores (pat.).
  (excepto p 15, 25 y 35).
- motor turbina para servicio continuo.
- facilidad de control y reparación.
- sin duchas ni aspersores.
- sin bomba de agua.
- sin retenes de agua.

EL AGUA RIEGA EL EVAPORADOR POR MEDI0 DE LA TURBINA.

HOW IT WORKS

When the machine is switched on the compressor and the programmer start, and the water entry valve opens. After a few minutes (max. 4) the water entry valve is closed and the turbine starts sending water to evaporator where it cools, and returns unfrozen water to the water pan. The timer stops.

The cycle thermostat is placed in the evaporator and the program starts when the evaporator temperature reachs a fixed point (which can be adjusted by the user).

Once the production time has passed, the turbine stops, and the hot gas and the water entry valves open until the cubes fall down into the storage bin, after this a new production cycle is started.

Operating principle following the electric diagram (timer on defrost - microswitches depressed)

Current reaches the machine through the leads conected to terminals 1(blue) and 4(brown). The brown lead goes to the compressor start system and the programmer motor. The blue one to the terminal 4 of the stock-thermostat T1 which closes the contact with number 3. Another blue wire goes to the micro G1 terminal 2, that is closing the contact 1 with 4.

From the stock-thermostat T1(3) a red wire goes through the binding 2 that feeds the compresor, to the contact 3 of the cycle thermostat and to the contact 1 of the micros G1 and G2 which are closing contact with number 4 and G1 feeds the programmer motor G.

At this moment the following are working:

- •The compressor (S).
- •The water entry valve (P).
- •The hot gas valve (Q).
- •The programmer motor (G).
- •The fan by means of its presostat (cooled air).
- •The electrovalve condenses by means of its presostat.(with water in P15-25-35).

Motor G is working, the micro´s rollers go off of the pins closing circuits 1-2.

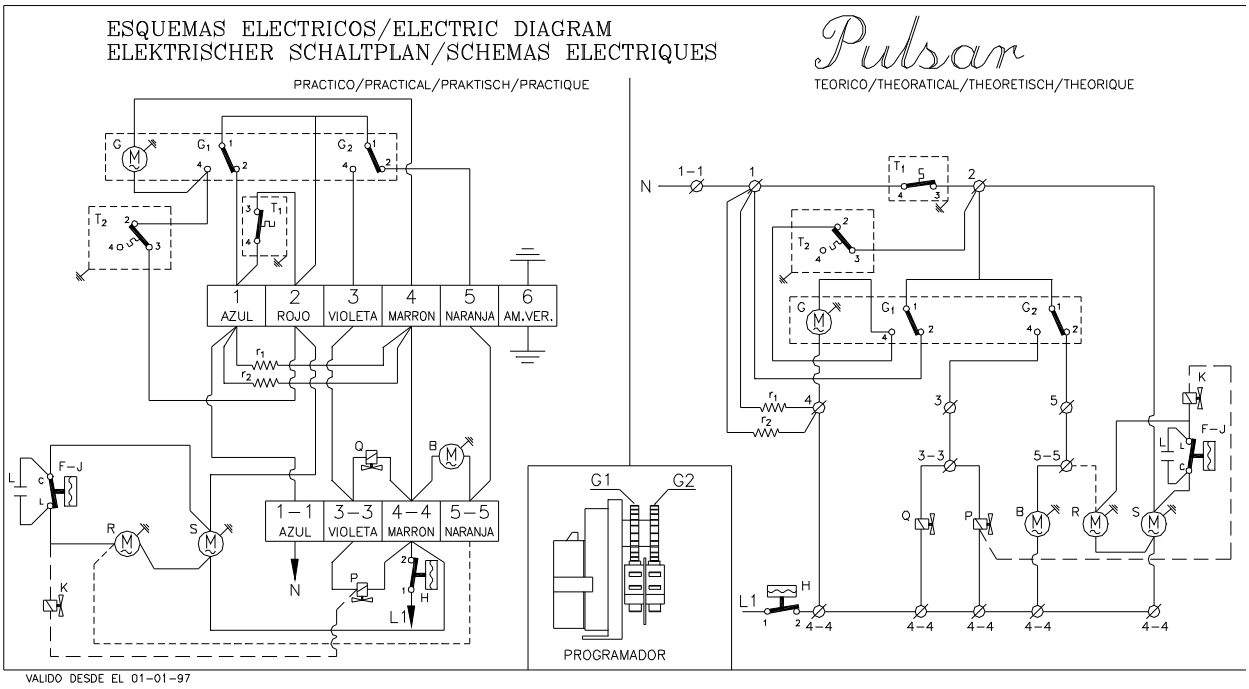
Now current reachs the turbine and the fan through contact 2 in micro G2, (in water-cooled models) circuit number 4 in micro G2 which fed the hot gas (Q) and the water entry (P) valves is interrupted. At the same time while the thermostat T2 is between 4-3, current does not reach the programmer motor. The compressor is still working.

The evaporation temperature decreases until it reaches the fixed point, then the cycle thermostat closes circuit 3-2.

When the cycle is completed, the pins make the micros change the circuit, stopping the turbine and opening the hot gas and the water entry valves. The hot gas together with the water raise the temperature and make the cycle thermostat change its position.

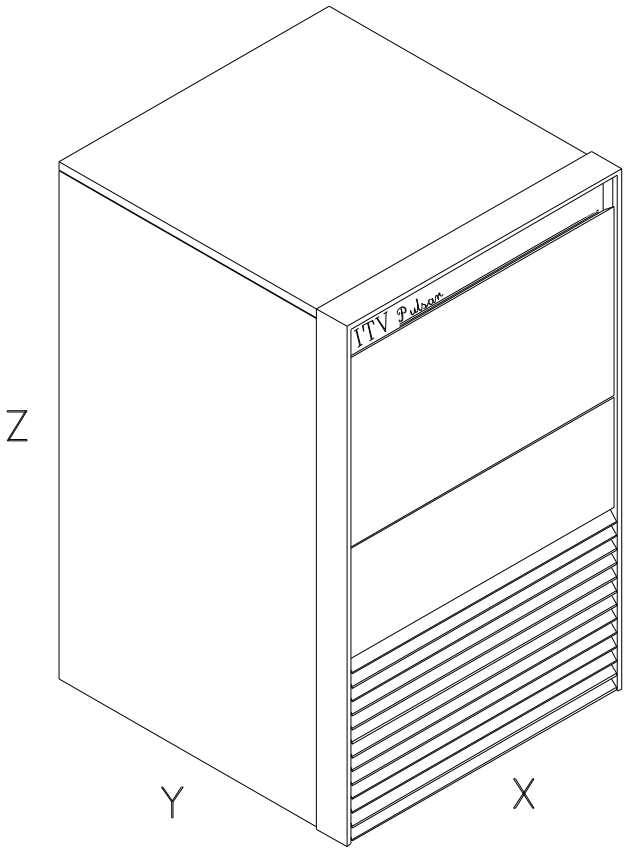
The production-defrosting cycle will be repeated until the storage bin is full, then the stock-thermostat (T1) stops the machine, if the stock-thermostat stops the production cycle when it has begun, it will be finished because the current goes through the micro G1 contacts 1-2 until the defrost cycle starts and the thermostat T2 contacts change.

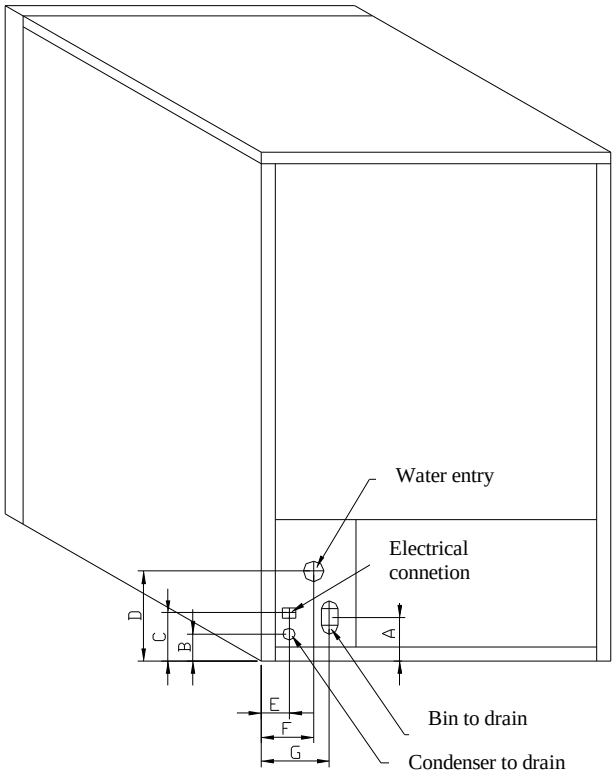
When cubes are removed from the bin, ice level falls and stock- thermostat changes and starts a new production cycle.


ESQUEMAS ELECTRICOS/ELECTRIC DIAGRAM
ELEKTRISCHER SCHALTPLAN/SCHEMAS ELECTRIQUES
Pulsar
PRACTICO/PRACTICAL/PRAKTISCH/PRACTIQUE
TEORICO/THEORATICAL/THEORETISCH/THEORIQUE
1 AZUL
2 ROJO
3 VIOLETA
4 MARRON
5 NARANJA
6 AM.VER.
1-1 AZUL
3-3 VIOLETA
4-4 MARRON
5-5 NARANJA
G1
G2
PROGRAMADOR
VALIDO DESDE EL 01-01-97

SPECIFICATIONS

Models: ***PULSAR 15/25/35/45/65/85/145***





La cota Z es la minima altura de la máquina. Esta puede aumentarse hasta en 80 mm poniendo las patas supletorias

MODEL	X	Y	Z	A	B	C	D	E	F	G
PULSAR 15	410	510	670	60	35	65	123	22	42	84
PULSAR 25	410	510	740	60	35	65	123	22	42	84
PULSAR 35	410	510	790	60	35	65	123	22	42	84
PULSAR 45	525	555	870	60	42	74	123	42	52	84
PULSAR 65	685	555	870	60	42	74	123	42	52	84
PULSAR 85	685	555	1120	60	42	74	123	42	52	84
PULSAR 145	685	705	1120	60	42	74	123	42	52	84

Cotas en milimetros

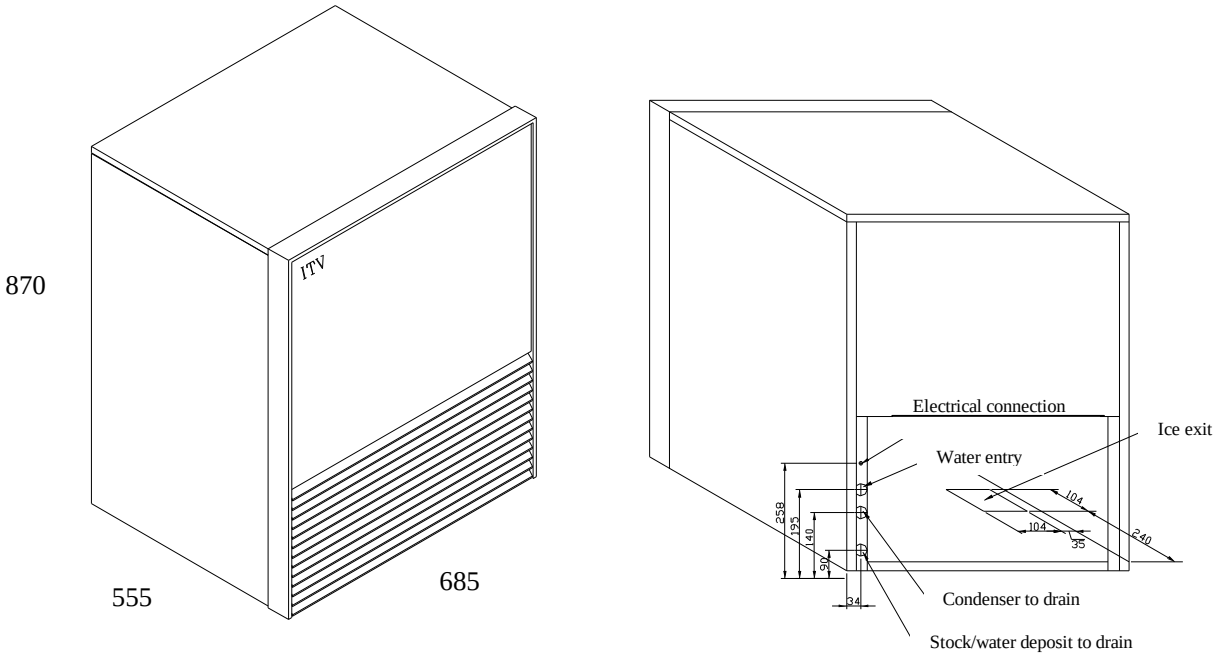
TECHNICAL DATA

MODEL	CONDENSER WATER CONSUMPTION L/HOUR (1)	PRODUCTION WATER COSUMPTION L/HOUR (1)	TOTAL WATER COSUMPTION L/HOUR (1)	NET WEIGHT (KG)	DIMENSIONS (CRATED) X*Y*Z	GROSS WEIGHT (KG)	VOLUME (M^3)
PULSAR 15 A		11	11	40	490x590x740	46	0.21
PULSAR 15 W	25	11	36	40	490x590x740	46	0.21
PULSAR 25 A		9	9	44	490x590x810	51	0.23
PULSAR 25 W	27	9	36	44	490x590x810	51	0.23
PULSAR 35 A		11	11	49	490x590x900	56	0.25
PULSAR 35 W	32	11	43	49	490x590x900	56	0.25
PULSAR 45 A		14	14	60	590x610x970	70	0.35
PULSAR 45 W	34	14	48	60	590x610x970	70	0.35
PULSAR 65 A		11	11	75	750x610x970	85	0.44
PULSAR 65 W	39	11	50	75	750x610x970	85	0.44
PULSAR 85 A		13	13	90	750x610x1220	100	0.56
PULSAR 85 W	53	13	66	90	750x610x1220	100	0.56
PULSAR 145 A		17	17	100	750x1220x760	115	0.70
PULSAR 145 W	76	17	93	100	750x1220x760	115	0.70
MP 145 A		18	18	75	750x970x610	85	0.44
MP 145 W	80	18	98	75	750x970x610	85	0.44

MODEL	REFRIG. CHARGE	HIGH PRESSURE				LOW PRESSURE		TOTAL CURRENT	FUSES (REQUIRED)	COMPRESSOR OUTPUT	TOTAL OUTPUT
		MINIMA		MAXIMA		MEDIA		(2)		(1)	(2)
	(GR)	Kg/cm^2	Psi	Kg/cm^2	Psi	Kg/cm^2	Psi	(A)	(A)	(W)	(W)
PULSAR 15 A	400	16	228	17	242	2.5	38	1.7	10	175	300
PULSAR 15 W	340	16	228	17	242	2.5	38	1.7	10	175	300
PULSAR 25 A	400	16	228	17	242	2.5	38	1.8	10	175	310
PULSAR 25 W	375/365	16	228	17	242	2.5	38	1.8	10	175	310
PULSAR 35 A	380	16	228	17	242	2.5	38	1.8	10	190	320
PULSAR 35 W	360	16	228	17	242	2.5	38	1.8	10	190	320
PULSAR 45 A	370	16	228	17	242	2.5	38	2.5	10	290	450
PULSAR 45 W	400	16	228	17	242	2.5	38	2.5	10	290	450
PULSAR 65 A	410	16	228	17	242	2.5	38	2.7	10	290	475
PULSAR 65 W	420	16	228	17	242	2.5	38	2.7	10	290	475
PULSAR 85 A	490	16	228	17	242	2.5	38	3.2	10	365	550
PULSAR 85 W	490	16	228	17	242	2.5	38	3.2	10	365	550
PULSAR 145 A	725	16	228	17	242	2.5	38	3.2	10	440	650
PULSAR 145 W	500	16	228	17	242	2.5	38	3.2	10	440	650
MP 145 A	725	16	228	17	242	2.5	38	3.5	10	560	700
MP 145 W	550	16	228	17	242	2.5	38	3.5	10	560	700

1) Data obtained at room temperature (20°C), water introduced at 15°C; water quality = 500ppm
2) Maximum consumption obtained at room temperature = 43°, according to UNE climate classification Class T (Tropicalised).
NOTE: Expansion controlled by capillary.

Model: *MP 145*



MODEL	CONDENSER WATER COSUMPTION L/HOUR (1)	PRODUCTION WATER COSUMPTION L/HOUR (1)	TOTAL WATER COSUMPTION L/HOUR (1)	NET WEIGHT (KG)	DIMENSIONS CRATED X*Y*Z	GROSS WEIGHT (KG)	VOLUME (M^3)
MP 145 A		18	18	75	750x970x610	85	0.44
MP 145 W	80	18	98	75	750x970x610	85	0.44

MODEL	REFRIG. CHARGE	HIGH PRESSURE				LOW PRESSURE		TOTAL CURRENT (2)	FUSES (TO INSTAL)	OUTPUT COMPRESSOR (1)	TOTAL OUTPUT (2)
		MIN		MAX		AVERAGE					
	(GR)	Kg/cm^2	Psi	Kg/cm^2	Psi	Kg/cm^2	Psi	(A)	(A)	(W)	(W)
MP 145 A (40 or 50 gr ice cubes)	725	16	228	17	242	2.5	38	5	16	800	950
MP 145 W (40 or 50 gr ice cubes)	550	16	228	17	242	2.5	38	5	16	800	950

MODEL	REFRIG. CHARGE	HIGH PRESSURE				LOW PRESSURE		TOTAL CURRENT (2)	FUSES (TO INSTAL)	OUTPUT COMPRESSOR (1)	TOTAL OUTPUT (2)
		MIN		MAX		AVERAGE					
	(GR)	Kg/cm^2	Psi	Kg/cm^2	Psi	Kg/cm^2	Psi	(A)	(A)	(W)	(W)
MP 145 A (60 gr ice cubes)	1000	15	214	17	242	2.5	38	5	16	800	950
MP 145 W (60 gr ice cubes)	1100	15	214	17	242	2.5	38	5	16	800	950

1) Data obtained at room temperature (20°C), water introduced at 15°C; water quality = 500 ppm.
2) Maximum consumption obtained at room temperature=43°C, according to UNE climate classification Class T (Tropicalised).
NOTE: Expansion controlled by thermostatic expansion valve.

PULSAR (40GR) ICE CUBE MAKER PRODUCTION

PULSAR 15

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	39 / 15	40 / 14	41 / 14	42 / 13.5	43 / 13	44 / 12.5	45 / 12
40	36 / 16	39 / 15	40 / 14.5	41 / 14	42 / 13.5	43 / 13	44 / 12.5
35	34 / 17	36 / 16	39 / 15	36 / 16	41 / 14	42 / 13.5	43 / 13
30	32 / 18	34 / 17	36 / 16	39 / 15	40 / 14.5	41 / 14	42 / 13.5
25	30 / 19	32 / 18	34 / 17	36 / 16	39 / 15	40 / 14.5	41 / 14
20	29 / 21	30 / 19	32 / 18	34 / 17	36 / 15.5	39 / 15	40 / 14.5
15	28 / 22	29 / 21	30 / 19	32 / 18	34 / 16.5	36 / 15.5	39 / 15
10	27 / 23	28 / 22	29 / 21	30 / 19	32 / 17.5	35 / 16.5	37 / 15

PULSAR 25

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	46 / 25	49 / 24	52 / 23	53 / 22	54 / 21	55 / 20	56 / 19
40	43 / 27	46 / 25	49 / 24	52 / 23	53 / 22	54 / 21	55 / 20
35	40 / 29	43 / 27	46 / 25	49 / 24	52 / 23	53 / 22	54 / 21
30	38 / 31	40 / 29	43 / 27	46 / 25	49 / 24	52 / 23	53 / 22
25	37 / 32	38 / 31	40 / 29	43 / 27	46 / 25	49 / 24	52 / 23
20	36 / 33	37 / 32	38 / 31	40 / 29	43 / 27	46 / 25	49 / 24
15	35 / 34	36 / 33	37 / 32	38 / 31	40 / 29	43 / 27	46 / 25
10	34 / 35	35 / 34	36 / 33	37 / 32	38 / 31	40 / 29	43 / 27

PULSAR 35

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	45 / 25	49 / 24	51 / 23	52 / 22	53 / 21	54 / 20	55 / 19
40	40 / 29	45 / 25	49 / 24	51 / 23	52 / 22	53 / 21	54 / 20
35	36 / 32	40 / 29	45 / 25	49 / 24	51 / 23	52 / 22	53 / 21
30	32 / 37	36 / 32	40 / 29	45 / 25	49 / 24	51 / 23	52 / 22
25	30 / 40	32 / 37	36 / 32	40 / 29	45 / 25	49 / 24	51 / 23
20	29 / 41	30 / 40	32 / 37	36 / 32	40 / 29	45 / 25	49 / 24
15	28 / 42	29 / 41	30 / 40	32 / 37	36 / 32	40 / 29	45 / 25
10	26 / 46	28 / 42	29 / 41	30 / 40	32 / 37	36 / 32	40 / 29

PULSAR 45

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	29 / 40	30 / 38	31 / 36	32 / 35	33 / 34	34 / 33	35 / 32
40	28 / 42	29 / 40	30 / 38	31 / 36	32 / 35	33 / 34	34 / 33
35	27 / 44	28 / 42	29 / 40	30 / 38	31 / 36	32 / 35	33 / 34
30	26 / 46	27 / 44	28 / 42	29 / 40	30 / 38	31 / 36	32 / 35
25	25 / 47	26 / 46	27 / 44	28 / 42	29 / 40	30 / 38	31 / 36
20	24 / 49	25 / 47	26 / 46	27 / 44	28 / 42	29 / 40	30 / 38
15	23.5 / 50	24 / 49	25 / 47	26 / 46	27 / 44	28 / 42	29 / 40
10	23 / 52	23.5 / 50	24 / 49	25 / 47	26 / 46	27 / 44	28 / 42

PULSAR 65

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	48 / 49	50 / 45	52 / 43	54 / 41	55 / 40	56 / 39	57 / 38
40	45 / 53	48 / 49	50 / 45	52 / 43	54 / 41	55 / 40	56 / 39
35	41 / 58	45 / 53	48 / 49	50 / 45	52 / 43	54 / 41	55 / 40
30	38 / 63	41 / 58	45 / 53	48 / 49	50 / 45	52 / 43	54 / 41
25	37.5 / 64	38 / 63	41 / 58	45 / 53	48 / 49	50 / 45	52 / 43
20	37 / 65	37.5 / 64	38 / 63	41 / 58	45 / 53	48 / 49	50 / 45
15	36 / 66	37 / 65	37.5 / 64	38 / 63	41 / 58	45 / 53	48 / 49
10	35 / 68	36 / 66	37 / 65	37.5 / 64	38 / 63	41 / 58	45 / 53

PULSAR 85

ROOM TEMPERATURE °C	5	10	15	20	25	30	35
45	43 / 67	46 / 63	48 / 60	49 / 59	50 / 58	51 / 56	52 / 55
40	40 / 72	43 / 67	46 / 63	48 / 60	49 / 50	50 / 58	51 / 56
35	37 / 80	40 / 72	43 / 67	46 / 63	48 / 60	49 / 59	50 / 58
30	35 / 84	37 / 80	40 / 72	43 / 67	46 / 63	48 / 60	49 / 59
25	34.5 / 85	35 / 84	37 / 80	40 / 72	43 / 67	46 / 63	48 / 60
20	34 / 87	34.5 / 85	35 / 84	37 / 80	40 / 72	43 / 67	46 / 63
15	33 / 90	34 / 87	34.5 / 85	35 / 84	37 / 80	40 / 72	43 / 67
10	32 / 92	33 / 90	34 / 87	34.5 / 85	35 / 84	37 / 80	40 / 72

WATER TEMPERATURE (°C)

Water quality= 500 ppm (240 Micromhos/cm)

Min/cycle
Kg/day

PULSAR 145

45	45 / 91	47 / 88	49 / 84	50 / 82	51 / 80	52 / 78	53 / 76
40	42 / 98	45 / 91	47 / 88	49 / 84	50 / 82	51 / 80	52 / 78
35	38 / 108	42 / 98	45 / 91	47 / 88	49 / 84	50 / 82	51 / 80
30	36 / 114	38 / 108	42 / 98	45 / 91	47 / 88	49 / 84	50 / 82
25	34 / 121	36 / 114	38 / 108	42 / 98	45 / 91	47 / 88	49 / 84
20	33 / 125	34 / 121	36 / 114	38 / 108	49 / 98	45 / 91	47 / 88
15	30 / 137	33 / 125	34 / 121	36 / 114	38 / 108	42 / 98	45 / 91
10	29 / 142	30 / 137	33 / 125	34 / 121	36 / 114	38 / 108	42 / 98
	5	**10**	**15**	**20**	**25**	**30**	**35**

MP 145 (50gr)

45	62 / 77	67 / 71	73 / 65	75 / 64	76 / 63	77 / 62	78 / 61
40	56 / 85	62 / 77	67 / 71	73 / 65	75 / 64	76 / 63	77 / 62
35	49 / 98	56 / 85	62 / 77	67 / 71	73 / 65	75 / 64	76 / 63
30	46 / 104	49 / 98	56 / 85	62 / 77	67 / 71	73 / 65	75 / 64
25	44 / 108	46 / 104	49 / 98	56 / 85	62 / 77	67 / 71	73 / 65
20	43 / 111	44 / 108	46 / 104	49 / 98	56 / 85	62 / 77	67 / 71
15	42 / 114	43 / 111	44 / 108	46 / 104	49 / 98	56 / 85	62 / 77
10	41 / 116	42 / 114	43 / 111	44 / 108	46 / 104	49 / 98	56 / 85
	5	**10**	**15**	**20**	**25**	**30**	**35**

WATER TEMPERATURE (°C)

Water quality= 500 ppm (240 Micromhos/cm)

Min/cycle

Kg/day

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.

ITV 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:

Packing

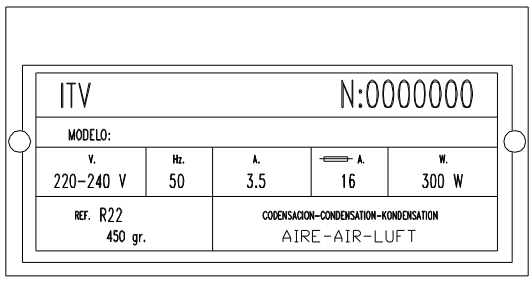
There is a label stick onto the cardboard packing bearing this serial number (1).

Machine body

On the back of the machine (1).

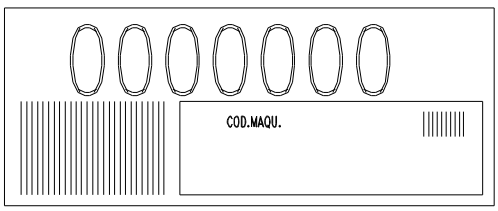
Rating plate and serial number

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



(1)

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

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, cardboard, 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 frontwise in order to carry out maintenance.

Recommended Placement of Unit

PULSAR machines are intended to operate at room temperature between 5°C and 43°C and with water temperature ranging betwen 5°C and 35°C. Below recommended mimimun temperatures, ice cubes will be unstick 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.

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.

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 # ITV 207499).

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.

c) CHLORINATED WATER: Chlorine taste can be avoided by installing a carbon filter (Part # ITV 207509).

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

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

Connecting Unit To Water Source

•Use 1.3 m. flexible tube (with 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 excedes 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.

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. with a minimum gradient of 3 cm per metre.

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's technical pages. Voltage fluctuations greater than 10% can cause problems or prevent machine from starting.

•Line to base of plug must have a minimum section=2.5 mm2.

•Be sure 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 were appliance is going to be installed.

STARTING UP

Preliminary Check

a) Is machine levelled?

b) Are voltage and frequency of mains supply the same as indicated on rating plate?

c) Is drainage system functioning?

d) Is air circulation and room temperature adequate? (Air cooled models)

	ROOM TEMPERATURE	WATER TEMPERATURE
MAXIMUM	43° C	35° C
MINIMUM	5° C	5° C

e) Is water pressure adequate?

MAXIMUM	0.7 Kg/cm2
MINIMUM	6 Kg/cm2

ATENTION: Check that voltage and mains frecuency are the same as in the rating plate.

Starting up

Having followed the installation instructions, 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) Verify that spray nozzles are all functioning
6) After 10 minutes, check that the water bin has no leaks on the maximum level overflow.
7) At the cycle's end, there should be frost formed on the compressor inlet tube except for the last 50 mm.

ATTENTION:

Advise the final user on maintenance procedures which are not included in warranty, as well as those breakdowns caused by neglect of proper maintenance procedures.

ADJUSTMENTS

Condenser water valve pressostat

(UP TO AND INCLUIDING PULSAR 35 WATER COOLED)

This pressostat controls high pressure by opening and closing the condenser cooling 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 38ºC. Below this pressure it will be difficult to unstick the cubes in the defrosting stage. Above this pressure, compressor life and ice production are both reduced. Pressure can be increased by turning the small screw on the pressostat clockwise. A full turn is equivalent to about 1.5 Kg/cm2.

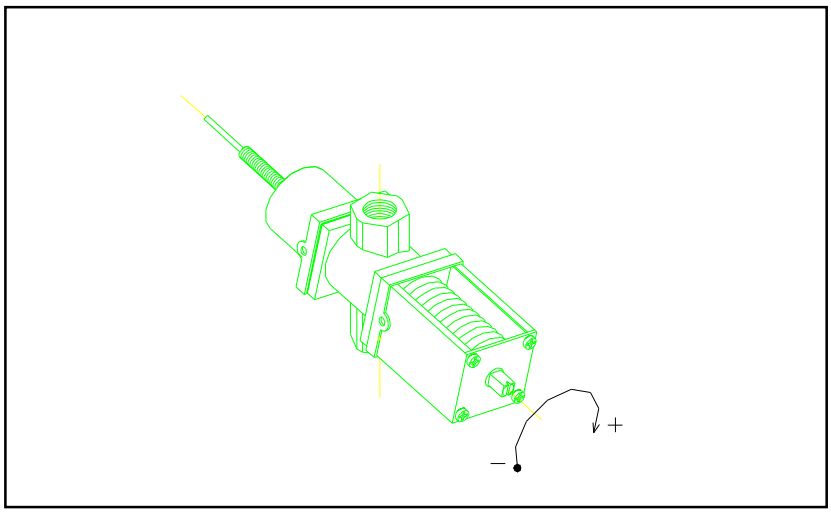
Water Pressure Control Valve

(FROM PULSAR 45 C WATER COOLED)

•High pressure shuld be maintained at 16.5 bar (235-245 Psi) which corresponds to a water exit temperature of 40°C.

•When ambient temperature exceeds 32°C, pressure and temperature of water at exit increase.

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

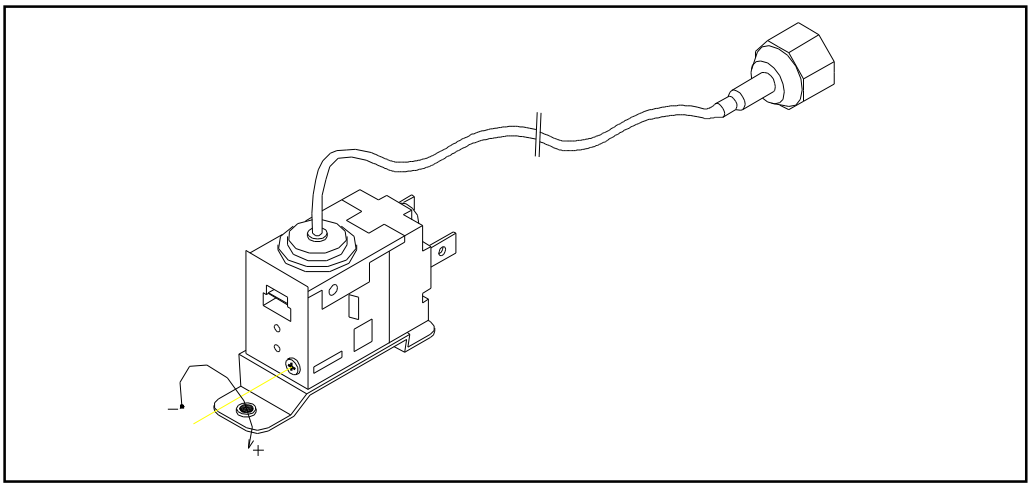


Pressure Control

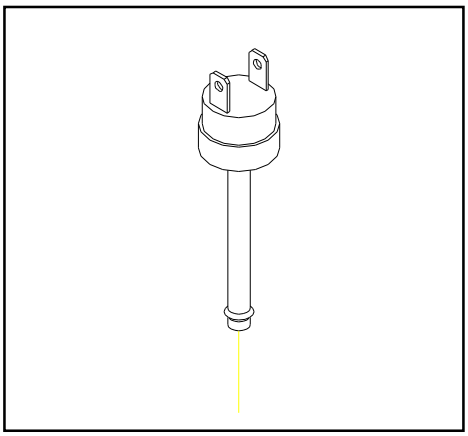
Fan pressostat (air condensation)

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.



Safety pressostat



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

a) Air circulation is not sufficient, room temperature is too high or condenser is dirty (air cooled models).

b) There is not enough water in the system or water temperat too high (water cooled models).

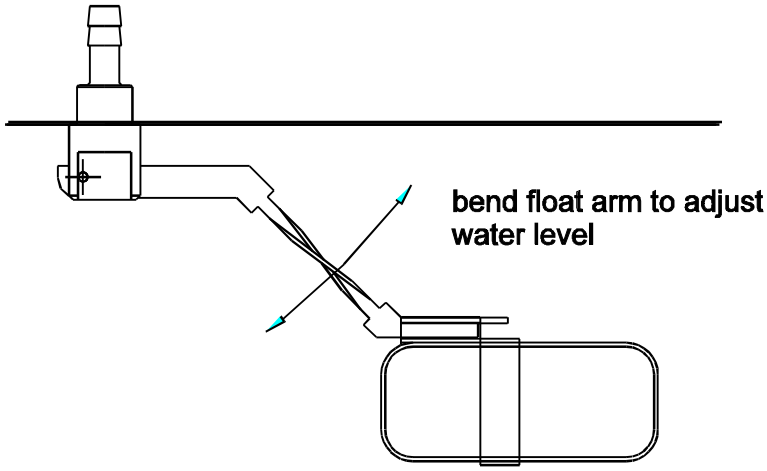
HIGH PRESSURE REGULATION (fixed):

27-21 Kg/cm2 (380-296 Psi.)

Float level valve (just in Modular models)

This is factory adjusted; but there may be variations with extreme water pressure values. If adjustment is required, set it by hand carefully bending the float steel arm (do NOT hold the plastic float while bending!). El nivel no debe superar los 30 mm., ya que retardaría el tiempo de fabricación al aportar agua de red (caliente) durante el proceso de fabricación.

If high water pressure variations are present, it is strongly recommended to install a pressure regulator, otherwise it will be very difficult to maintain a constant flow of water.



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.

IMPORTANT:

** 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	BIANNUAL	YEARLY	BIENNIAL	DURATION
Air condenser cleaning	0000	0000	****	****	****	30 minutes
Water condenser cleaning				####	****	90 minutes
Fabrication head filter cleaning			####	****	****	30 minutes
Water circuit cleaning		####	####	****	****	45 minutes
Sanitary cleaning		####	####	****	****	30 minutes
Water filter cleaning/replacement	####	####	****	****	****	30 minutes
Stock deposit cleaning.	&&&	&&&	&&&	&&&	&&&	--
Cleaning the outside	&&&	&&&	&&&	&&&	&&&	--

0000 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.

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, brush or low pressure air.

Ice production unit

Procede as folows:

1) Disconnect machine, close water faucet and place timer wheels on defrosting stage.
2) Remove plugs in water bin and level supports.
3) Place the overflow. Remove evaporator lid.
4) Prepare a solution of 50% phosphoric acid in distilled water. Do not use hydrochloric acid. Slowly pour solution into the top of the evaporator (solution is more effective at 35º - 40ºC).
5) Let solution stand for 10 minutes.
6) Release the brown wire (which corresponds to the compressor) from the sealed spade terminal near the compressor.
7) Replace plugs, lift curtain and pour solution into water bin.
8) Swith on machine (everything works except compressor) and wait for 20 minutes.
9) Remove plugs, disconnect machine and repeat (7) and (8) with fresh water.
10) Open water faucet, disconnect machine, remove plugs and place timer on defrosting stage. Replace plugs and switch on. Allow the machine to work for about 5 minutes. Repeat this procedure several times.
11) Connect the brown faucet, place timer wheels on defrosting stage and allow the machine to produce several series of ice cubes. Open water faucet, place timer wheels on defrosting stage and once a series of ice-cubes falls into the bin, disconnect machine and place timer wheels on defrosting stage again.

ATTENTION: ** Discard ice produced.

SANITARY CLEANING BEGINS NOW

12) Clean and replace all components, ensure that grill is clean and ice-cubes slide well. Check that strips on curtain can move freely. Check and/or change filters on water inlet.
13) Ensure that cycle thermostat is properly adjusted (cubes are not too full or too empty) and that frost forms at about 5 cm from compressor at the end of the production cycle.

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 connexions, 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.

SPECIAL ADVICE CONCERNING R-404 REFRIGERANT

- R-404 is a mixture of 3 liquid-phase gases. On evaporating, the 3 component gases separate
- Always use the liquid phase valve (at the end of condenser or accumulator) for refills and purges.
- When replacing a compressor. wash inside of circuit with a suitable solvent + pump, dry with nitrogen, REPLACE THE DRIER WITH ONE SUITABLE FOR R-404, which must also have ANTI-ACID properties.
- If you need to add oil, use one which is specific for R-404 (POE). If you are in doubt, contact the machine manufacturer.
- If there is a leak anywhere in the circuit where R-404 in the GAS phase, and a refill of over 10% is required, then ALL THE GAS IN THE CIRCUIT MUST BE PURGED AND THEN REFILL AS DESCRIBED PREVIOUSLY (LIQUID PHASE VALVE)

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) Faulty safety presostat	D) Replace.
	E) The cut off micro-switch is faulty or wrongly adjusted.	E) Check, adjust or change.
2) All the electrics work except compressor.	A) Loose wire.	A) Check connections.
	B) Faulty relay .	B) Replace relay.
	C) Faulty "Klixon".	C) Replace Klixon.
	D) Faulty compressor.	D) Replace compressor.
3) All the electrics work but the compressor "klixons" (cycles intermitenttly).	A) Voltage too low.	A) Check voltage.
	B) Dirty condenser.	B) Clean condenser.
	C) Obstruction in air circulation.	C) Move machine to a correct position.
	D) Fan has broken.	D) Replace fan.
	E) Starter capacitor faulty.	E) Replace condenser.
	F) Fan presostat faulty or wrongly adjusted.	F) Replace or adjust presostat.
	G) Water presostat valve faulty or wrongly adjusted.	G) Replace or adjust.
	H) Cooling water pressostat is faulty or badly adjusted.	H) Adjust or change.
	I) Cooling water entry valve is faulty.	I) Change.
	J) Non-condensable gases in system.	J) Purge system.

PROBLEM	POSSIBLE CAUSES	SOLUTION
4) Everything appears to be running correctly but no ice made in the evaporator.	A) Freezing system faulty (dirty condenser, water presostat or entrance valve faulty or wrongly adjusted insuficient refrigerant.	A) Check all the components (system).
	B) There is water in the gas circuit.	B) Replace the drier, empty the refrigerant (vacuum) and charge new refrigerant.
5) Ice cubes form correctly but do not unstick.	A) Water inlet filters dirty.	A) Clean filters on both ends of water hose to mains.
	B) Low water pressure.	B) Increase water pressure if possible. (This can often be done by removing flowmeter on faucet).
	C) Wrongly fan or condensation presostat.	C) Adjust or replace.
	D) Inlet cooling water valve is faulty (for machines without water presostat valve).	D) Check and replace (water-cooled models only) if faulty.
	E) (Only on water condensed machines). Presostat faulty	E) Adjust (40-43ºC), repair or replace.
	F) Room or water temperature below than 7º C.	F) Increase .
	G) Faulty micro-switch or timer.	G) Replace
	H) Production cycle too long.	H) Adjust cycle thermostat to increase the unsticking time.
	I) Hot gas valve does not open.	I) Check valve.
6) Low ice production.	A) Blocked condenser, obstructed air circulation or hot air comes from other machine.	A) Clean condenser, keep clear the ventilation area or move the machine.
	B) In water-cooled machines: dirty condenser, badly adjusted valve, pressostat, faulty water inlet valve or faulty pressostatic valve.	B) Clean condenser; check, adjust or replace.
	C) Faulty hot gas valve, doesn't close totaly.	C) Replace.
	D) Faulty fan or pressostat, faulty inlet cooling water valve.	D) Check fan and re-adjust pressostat or replace.
	E) Refrigerant charge too high or too low.	E) Adjust.
	F) Faulty water inlet valve: leaks and does not close fully.	F) Check and replace.
	G) Inefficient compressor.	G) Replace.
7) Ice cube are so large that they stick together and form a slab or plate of ice (especially in very low ambient and water temperatures).	A) Cycle thermostat is too low or faulty.	A) Adjust or change.
	B) Timer wheels do not turn.	B) Tighten screws on timer.
	C) Timer motor is faulty.	C) Check and replace.
	D) Micros on timer are faulty.	D) Replace, check for bridging.
8) Ice cubes are too large (especially in low ambient and water temperatures).	A) Cycle thermostat is adjusted too high.	A) Adjust until desired cube size.

PROBLEM	CAUSA PROBABLE	REMEDIO
9) Ice cubes are too small, and empty (especially in high ambient and water temperatures).	A) Cycle thermostat is adjusted too low.	A) Adjust until desired cube size.
	B) Low refrigerant charge.	B) Add refrigerant until there is frost formation 5 cm from the compressor at the end of the cycle.
10) Ice cubes are empty, rough edges and very white.	A) Insufficient water in water pan.	A) Correct a major water leak.
	C) Curtain does not close fully.	C) Adjust the curtain, clean scale (lime) on curtain metal axis.
11) Machine doesn't stop even when bin is full.	A) Faulty or badly adjusted bin thermostat.	A) Adjust and replace if necessary.
12) Ice cubes melt in bin.	A) Obstruction in drains (within machine or in premises).	A) Clear obstruction.