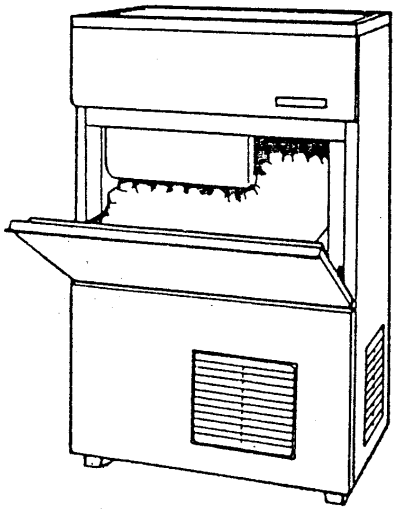
SERVICE MANUAL

SOLID-STATE CONTROL
SELF-CONTAINED CUBER

Model IM-122J

202J



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OUTLINES HOSHIZAKI NEW SOLID-STATE CONTROL CUBERS IM-J TYPE

Merits

A. SOLID-STATE CONTROL

1) A HOSHIZAKI EXCLUSIVE Solid-state Control is applied to all J-type cubers. This control includes Micro Processor Chips developped by HOSHIZAKI.
2) The Printed Circuit Board (hereafter "Controller Board") includes a stable and high-quality control system.
3) Any complicated adjustment is not required all year around. All models cuber are pretested and factory adjusted.
4) No specially designed tester or checker is required for checking the Controller Board. LED indicator lamps provided on the board gives a easy trouble diagnosis to service personels.

B. QUALITY

(1) Component
Components listed below are canceled in J-type cubers, and these functions are integrated into the Controllers Board. *IM-202J, **IM-122J

- o Cube Control Thermostat
- o Cube Control Timer
- o Harvest (Defrost) Control Thermostat
- o Thermal timer (for Bin Control)
- o Water Level Switch - over *80kg/day production models
- o Water Saving Switch - up to **50kg/day production models
- o Reset Swutch
- o Keep Relay - over *80kg/day production models

(2) Solder-connection Expansion Valve is equipped instead of the former Flare-connection one. This reduce the possibility of refrigerant leaks.

(3) An improved coating material is used for the icemaker frames to get rust proof.

EXTERIOR

(Self-contained Models)

	H-type	J-type
Side Panels	Stainless No.4	2B
Rear Panel	2B	Garvanized

(Modular Models)

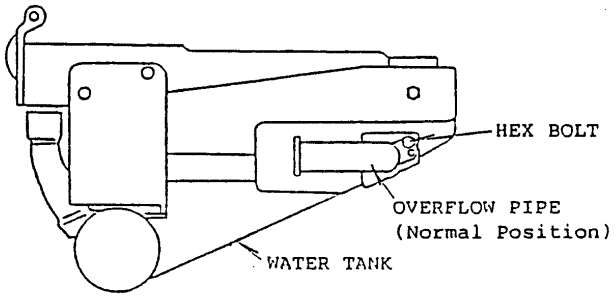
Side Panels	No.4	2B
Rear Panel	No.4	2B

C. WATER SAVING

(1) Water Consumption is improved by using a specially designed Water Tank, and a new Water Control System. (over*80kg/day production models) *IM-202J

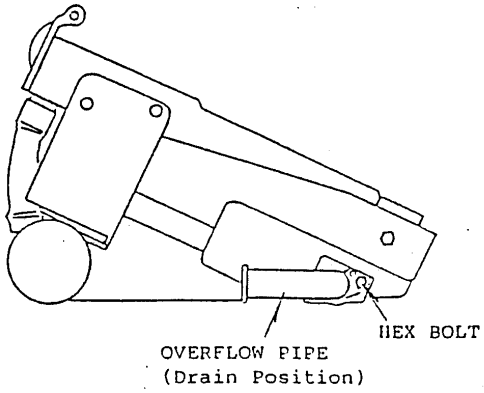
(2) The new developped Water Tank includes a unique Overflow Mechanism.

Normal Use



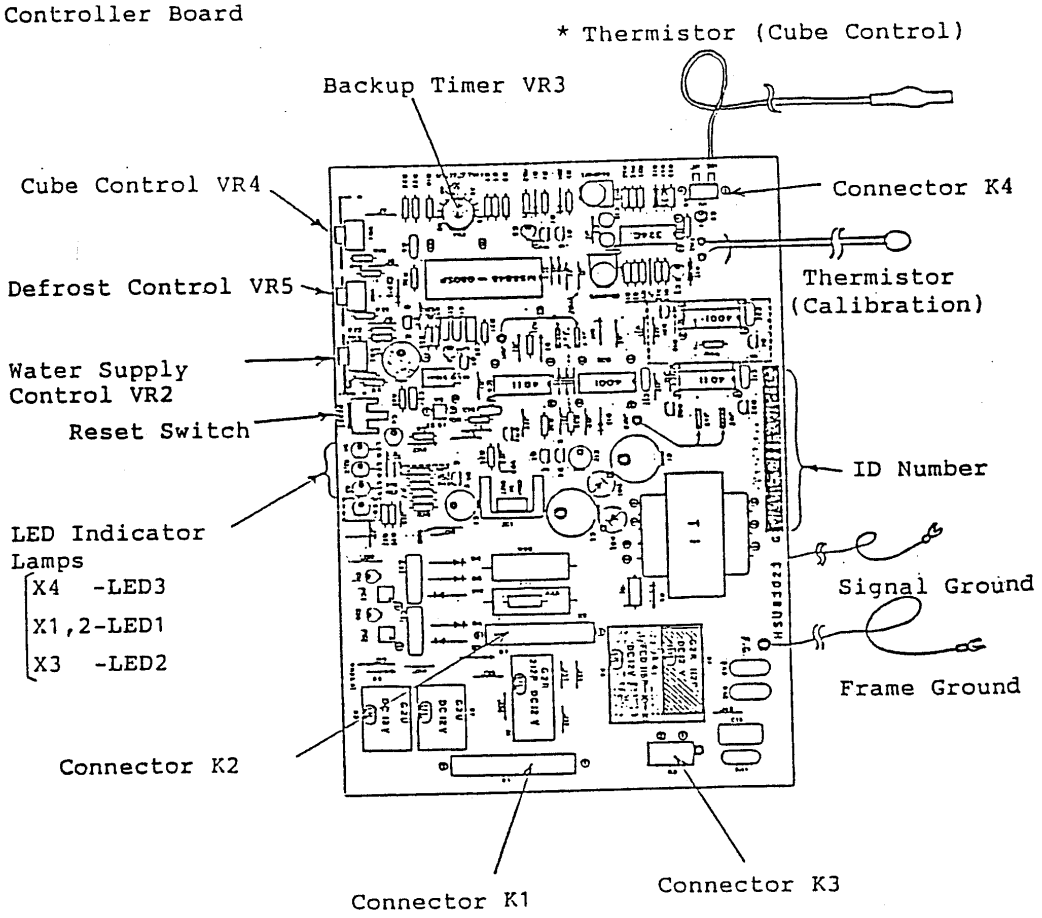
Water cooled in a freezing cycle will not drain through OVERFLOW PIPE completely. In harvest cycle, cool water remains in Water Tank and cool coming defrost water. This is effective for recycling heat, resulting in Water Saving.

High-Hardness



In High-Hardness areas, always operate the icemaker with OVERFLOW PIPE in the DRAIN position, to prevent a concentration of Calcium Carbonate, etc.

Controller Board

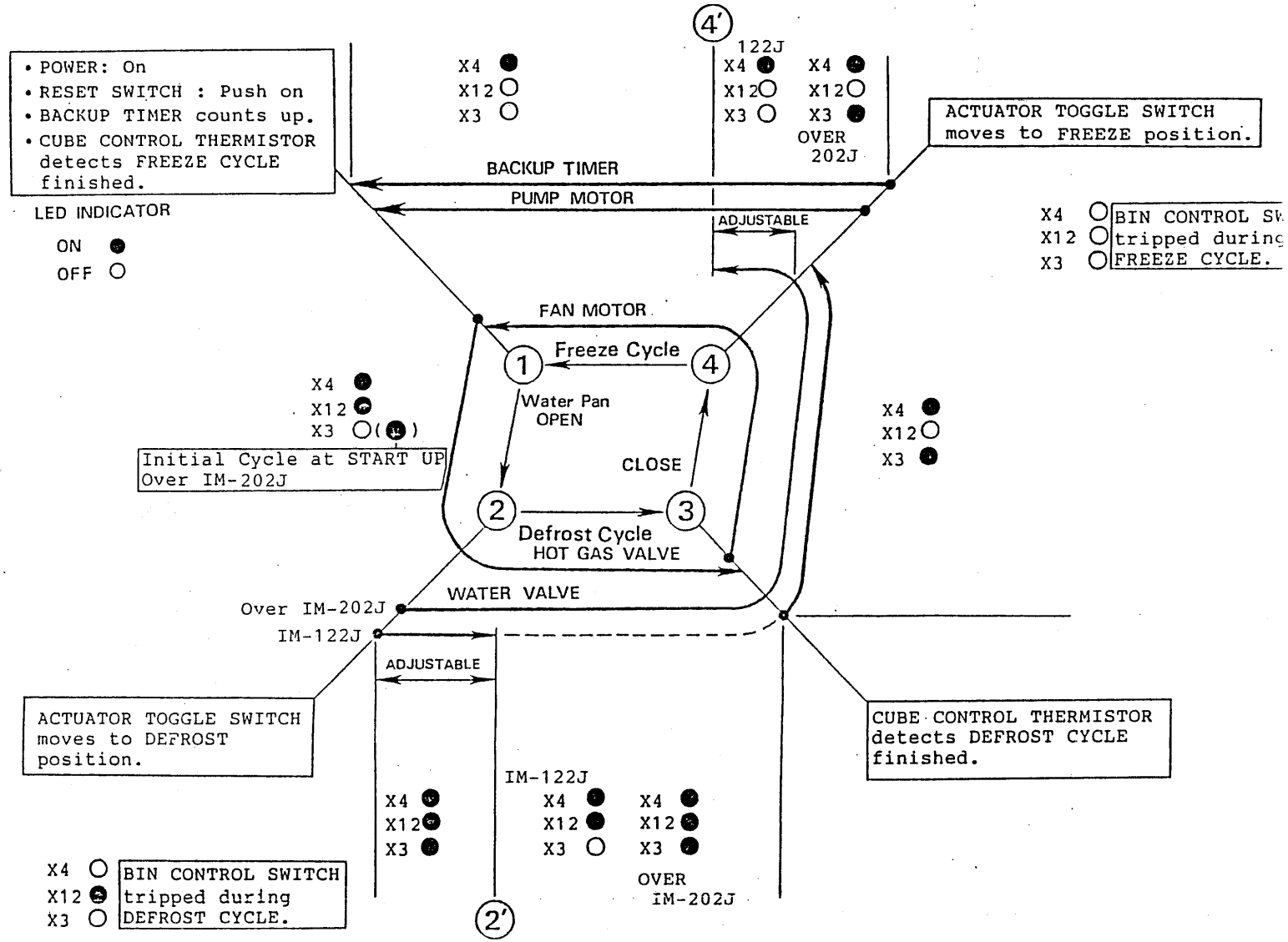


Model	ID No.	Thermistor (Calibration)
IM-122J	G05	Yes
IM-202J	**G06	Yes
IM-442DJ	G07	No

Note; *Thermistor (Cube Control) Order Number.

IM-122J, -202J	425373-03
IM-442DJ	425673-04

**G06 Type board is supplied as SERVICE PARTS KIT.
G05 and G07 Type will not be supplied.
Order the Service Part by 425495-06.


• POWER: On
• RESET SWITCH : Push on
• BACKUP TIMER counts up.
• CUBE CONTROL THERMISTOR detects FREEZE CYCLE finished.
LED INDICATOR
ON
OFF
4'
X4
X12
X3
122J
OVER 202J
ACTUATOR TOGGLE SWITCH moves to FREEZE position.
BACKUP TIMER
PUMP MOTOR
ADJUSTABLE
X4 BIN CONTROL SW
X12 tripped during
X3 FREEZE CYCLE.
FAN MOTOR
Freeze Cycle
1
4
Water Pan OPEN
CLOSE
2
3
Defrost Cycle
HOT GAS VALVE
Initial Cycle at START UP
Over IM-202J
WATER VALVE
Over IM-202J
IM-122J
ADJUSTABLE
ACTUATOR TOGGLE SWITCH moves to DEFROST position.
CUBE CONTROL THERMISTOR detects DEFROST CYCLE finished.
IM-122J
OVER IM-202J
X4 BIN CONTROL SWITCH
X12 tripped during
X3 DEFROST CYCLE.
2'

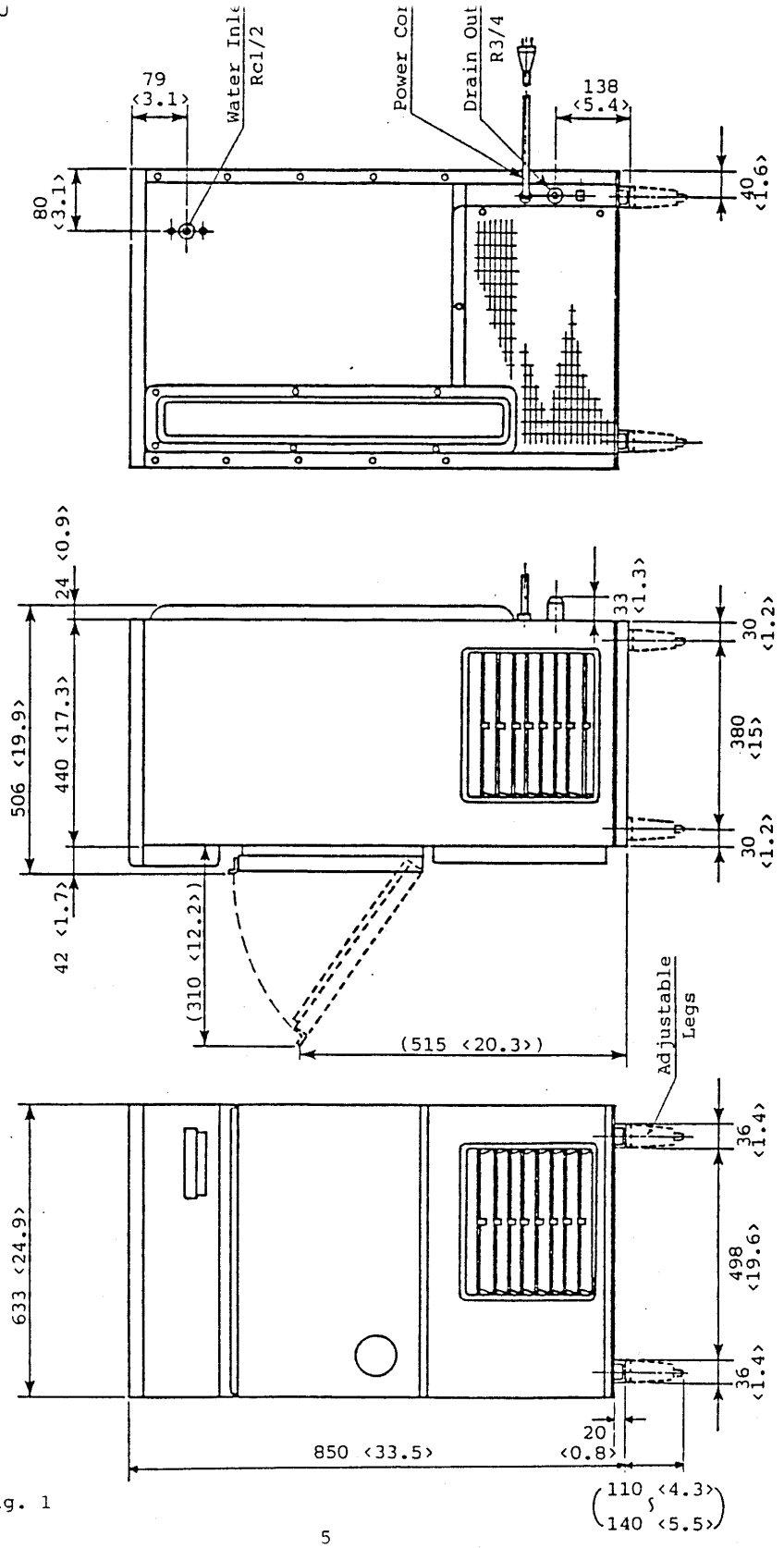


Fig. 1

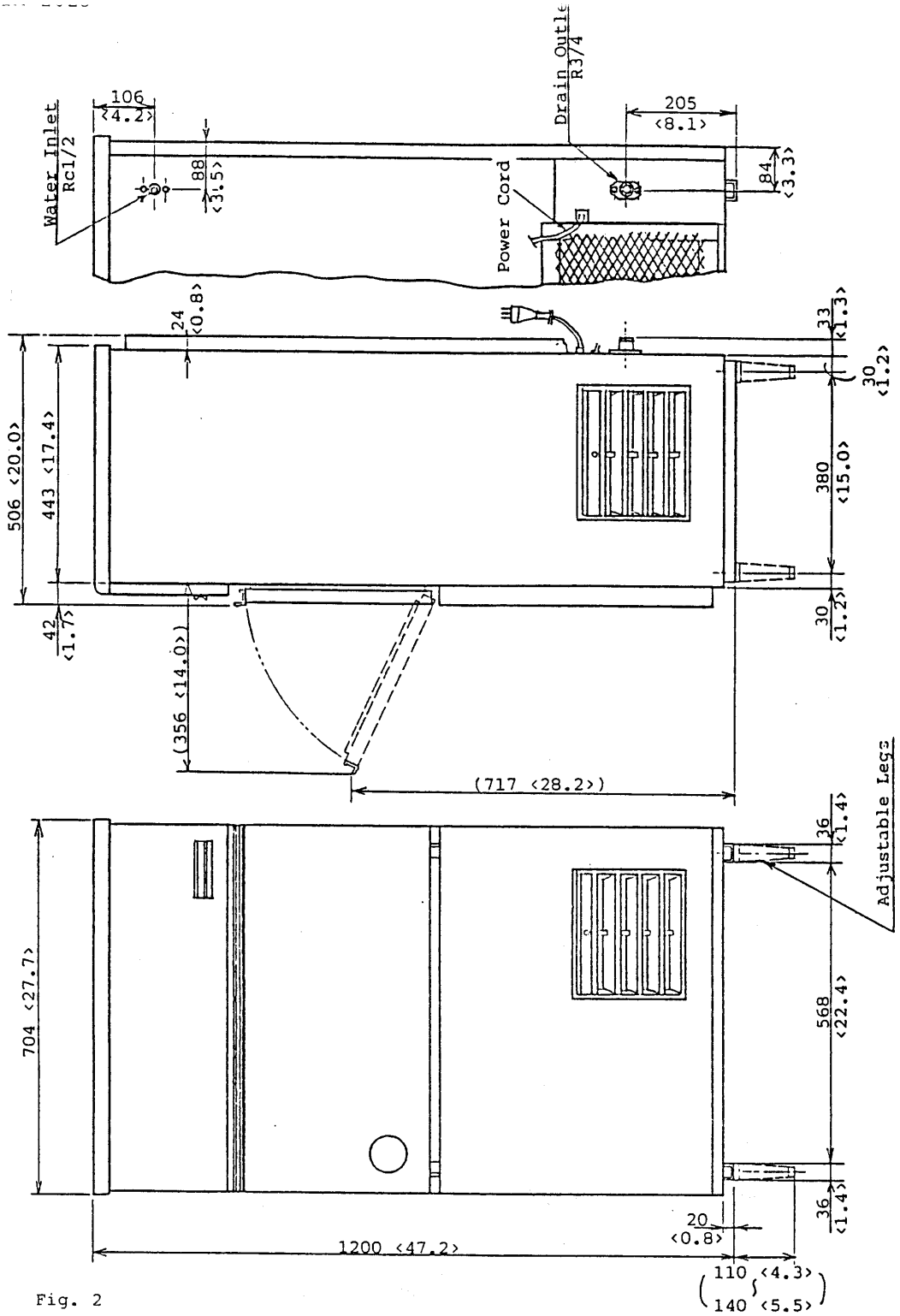
Unit: mm (inch)

SPEC NO. ISSUED:

MODEL: SOLID-STATE CONTROL
SELF-CONTAINED CUBER
IM-122J-25

NAMEPLATE RATING	
AC SUPPLY VOLTAGE	115/120V 1Phase 60Hz
AMPERAGE	Freeze 4.0A, Defrost 4.8A
TEST PRESSURE	High 235PSI, Low 140PSI
REFRIGERANT	R12 8.5oz (240g)
MINIMUM CIRCUIT AMPACITY	10A
MAXIMUM FUSE SIZE	10A
DIMENSIONS	24.9"L x 19.9"D x 33.5"H
CONNECTIONS	Inlet Rc1/2, Outlet R3/4
EXTERIOR	Stainless Steel
ACCESORRY	Fuse (1), Scoop (1), Manual (1)
WEIGHT	Net 132lbs (60kg) Gross 146lbs (66kg)
REFRIGERATON	
ICEMAKING SYSTEM	Cell
COMPRESSOR	Hermetic JAE4440B, 300W
CONDENSER	Air-cooled
DEFROST	Hot Gas
EVAPORATOR	Tin-plated copper
REFRIGERANT CONTROL	Capillary tube
COOLING WATER CONTROL	-None-
ELECTICAL	Controller Board Type G05
CUBE CONTROL	Thermistor ⎫
DEFROST CONTROL	Thermistor ⎬ Included in G05 board
WATER SUPPLY CONTROL	Timer ⎪
BIN CONTROL	Microswitch ⎭
PROTECTION	Compressor- OVERLOAD Control- FUSE
LIMITATIONS	
AMBIENT TEMPERATURE	Min. 34°F - Max. 95°F
WATER SUPPLY TEMPERATURE	Min. 41°F - Max. 95°F
VOLTAGE VARIATION	Rated Voltage ±10%
WATER SUPPLY PRESSURE	Min. 7PSI - Max. 113PSI
ICE PRODUCTION	Cube Size 1" x 1" x 0.9"
PER 24 HR	123lbs (70°F/50°F), 95lbs (90°F/70°F)
PER CYCLE	Approx. 1.6lbs, 56Pcs.
FREEZE CYCLE TIME	Approx. 15min (70°F/50°F) 22min (90°F/70°F)
STORAGE CAPACITY	57lbs, Bin Cont Setting 40lbs
ELECTRICAL COMSUMPTION	440W (90°F/70°F)
WATER COMSUMPTION	9.7gal/h (70°F/50°F) 7.4gal/h (90°F/70°F)

We reserve the right to make changes in specifications and design without prior notice.



Unit: mm ‹inch›

Fig. 2

SPEC NO.	ISSUED:
MODEL: SOLID-STATE CONTROL SELF-CONTAINED CUBER IM-202J-21	
NAMEPLATE RATING AC SUPPLY VOLTAGE AMPERAGE TEST PRESSURE REFRIGERANT	 115/120V 1 Phase 60Hz Freeze 6.9A, Defrost 8.3A High 235PSI, Low 140PSI R12 12.3oz (350g)
MINIMUM CIRCUIT AMPACITY	15A
MAXIMUM FUSE SIZE	15A
DIMENSIONS	27.7"L x 19.9"D x 47.2"H
CONNECTIONS	Inlet Rc1/2, Outlet R3/4
EXTERIOR	Stainless Steel
ACCESORRY	Fuse (1), Scoop (1), Manual (1)
WEIGHT	Net 170lbs (77kg) Gross 196lbs (89kg)
REFRIGERATON ICEMAKING SYSTEM COMPRESSOR CONDENSER DEFROST EVAPORATOR REFRIGERANT CONTROL COOLING WATER CONTROL	 Cell Hermetic CL-50J-1, 400W Air-cooled Hot Gas Tin-plated copper Thermostatic Expansion Valve -None-
ELECTICAL CUBE CONTROL DEFROST CONTROL WATER SUPPLY CONTROL BIN CONTROL PROTECTION	Controller Board Type G06 Thermistor Thermistor Timer Microswitch Compressor- OVERLOAD Control- FUSE (Thermistor, Thermistor, Timer, Microswitch: Included in G06 board)
LIMITATIONS AMBIENT TEMPERATURE WATER SUPPLY TEMPERATURE VOLTAGE VARIATION WATER SUPPLY PRESSURE	 Min. 34°F - Max. 95°F Min. 41°F - Max. 95°F Rated Voltage ±10% Min. 7PSI - Max. 113PSI
ICE PRODUCTION PER 24 HR PER CYCLE FREEZE CYCLE TIME STORAGE CAPACITY ELECTRICAL COMSUMPTION WATER COMSUMPTION	Cube Size 0.8" x 0.8" x 0.6" 198lbs (70°F/50°F), 154lbs (90°F/70°F) Approx. 2.5lbs, 190Pcs. Approx. 16min (70°F/50°F) 22min (90°F/70°F) 121lbs, Bin Cont Setting 62lbs 770W (90°F/70°F) 7.9gal/h (70°F/50°F) 4.2gal/h (90°F/70°F)

We reserve the right to make changes in specifications and design without prior notice.

II. Installation and Operating Instructions

1. UNPACKING

* Visually inspect the exterior of the shipping container, and any severe damage noted should be reported to the carrier.

WARNING

Remove shipping tape and packing as follows. If any left in the icemaker, it will not work properly.

* Remove shipping tape holding the Door and Front Panel.

* Lift off the Top Panle and remove the string holding the Water Plate.

* Remove the package containing accessories. Remove shipping tape holding the Bin Control Switch. (See Fig. 3)

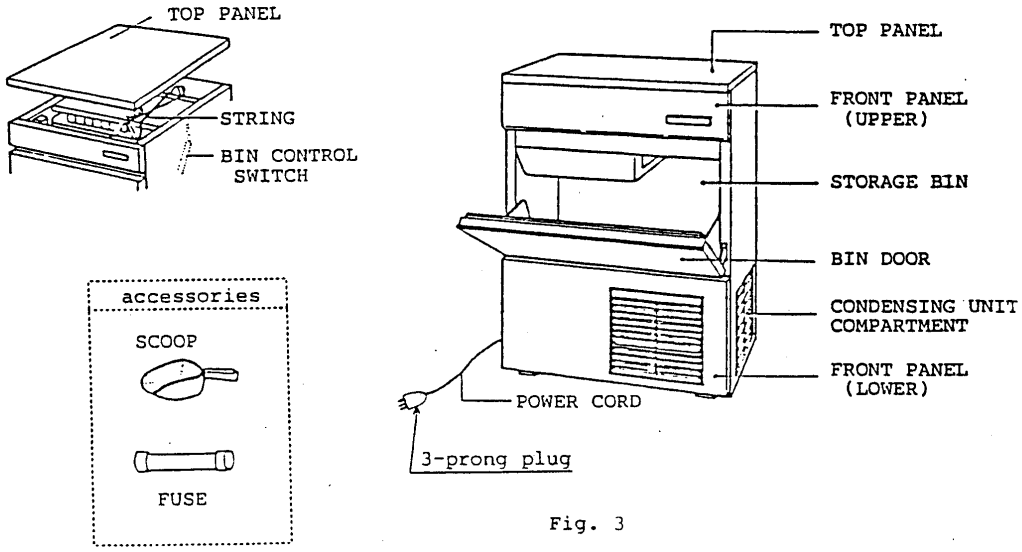


Fig. 3

* Check that refrigerant lines do not rub or touch lines or other surfaces, and that fan blade moves freely.

* Check that the compressor is snug on all mounting pads.

* See nameplate, located on the upper, right part of the left side panel. Check that your source voltage corresponds with the voltage specified on the nameplate.

2. INSTALLATION

a. LOCATION

WARNING

This icemaker is not designed for outdoor installation. Air temperatures should be below 35°C(95°F) or above 1°C(34°F). Water temperatures should be below 35°C(95°F) or above 5°C (41°F). Extended periods of operation at temperatures exceeding these limitations will constitute misuse resulting in loss of warranty coverage.

1. Position the icemaker in the selected permanent position.
   * Maximum Air Temperature 35°C(95°F), Minimum Air Temperature 1°C(34°F).
   * Maximum Water Temperature 35°C(95°F), Minimum Water Temperature 5°C (41°F).
   * Keep away from heat and near the portable water source and drainage.
   * Avoid the site where no dripping is allowed.
   * More than 15(fifteen)cm(6") clearance at rear, sides and top for good ventilation and easy services.

2. Level the icemaker in both the left-to-right and front-to-rear directions. Metal shims should be added to a corner or side to get the level required.
   * This icemaker will not work at sub-freezing temperatures. To prevent damage to the water supply line, drain the icemaker when air temperature is below zero.

b. ELECTRICAL CONNECTIONS

WARNING

This icemaker requires a ground that meets the national and local electrical code requirements. To prevent possible severe electrical shock injury to individuals or extensive damage to equipment, install a proper ground wire to this icemaker.

1. This icemaker must be pluged into the separated power receptacle which has enough capacity. The maximum allowable voltage variation should not exceed ±10(ten) percent of the nameplate rating. (See nameplate.)

2. Usually an electrical permit and services of a licensed electrician will be required.

c. WATER SUPPLY & DRAIN CONNECTIONS

WARNING

To prevent damage to the freezer mechanism, do not operate this icemaker when the water supply is OFF, or is below 0.5 kg/cm²(7 PSI), the recommended water pressure. Stop the icemaker until proper water pressure is resumed.

1. Water supply inlet is Rc1/2. An optional plastic mesh strainer should be installed with the cleanout plug down. Locate the strainer in the water supply line, next to the icemaker with the arrow on the strainer, in the direction of the water flow.

2. A water supply line shut-off valve and drain valve must be installed.

3. Water supply pressure should be minimum 0.5 kg/cm²(7 PSI) and maximum 8 kg/cm²(113 PSI). If the pressure exceeds 8 kg/cm²(113 PSI), use a pressure reducing valve.

4. Drain outlet is R3/4 male thread. Drain must be 2(two)cm fall per 1 (one)m(1/4" per 1') on horizontal runs to get good flow.

5. Keep more than 5(five)cm air gap(2" air gap) between the drain pipe end and the sink.

6. In some cases, a plumbing permit and services of a licensed plumber will be required. (See Fig. 4)

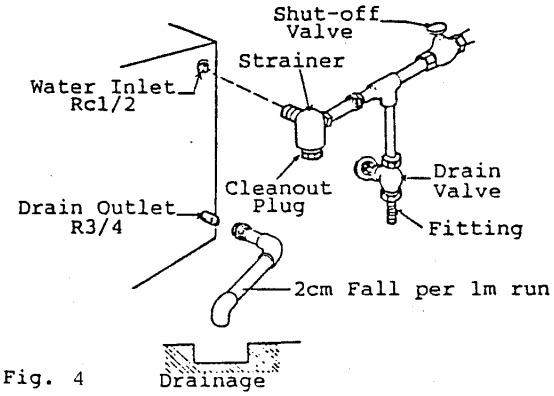


Fig. 4

d. FINAL CHECK LIST

1. Is the icemaker level?
2. Is the icemaker in a site where ambient temperatures are a minimum of 1°C(34°F) and maximum 35°C(95°F) all year around?
3. Is there at least 15cm(6") clearance around the icemaker for easy maintenance and service?
4. Have all shipping tape, string and packing been removed from the icemaker?
5. Have all electrical and piping connections been made?
6. Has the electrical power supply voltaged been tested or checked against the nameplate rating? Has a proper ground been installed to the icemaker?
7. Is the water supply line shut-off valve and drain valve installed. Has the water supply pressure been checked to ensure a minimum of 0.5 kg/cm^2 and maximum 8 kg/cm^2?
8. Have the compressor hold-down bolts and all refrigerant lines been checked against vibration and possible failure?
9. Have the Bin Control Switch been checked to work normally?
10. Has the Storage Bin been cleaned and wiped with a clean cloth?
11. Has the user been given the Instruction Manual and instructed on how to operate the icemaker and the importance of periodic maintenance recommended?
12. Has the user been given the name and telephone number of the Authorized Service Agency?

3. START UP - for IM-122J

Check that shipping tape, string and packing are removed before starting the icemaker.

1. Clean inside the storage bin and door.

2. Open the water supply line shut-off valve and plug in.

   * Water pan will open first, and then close into freezing cycle automatically. (See Fig.5)

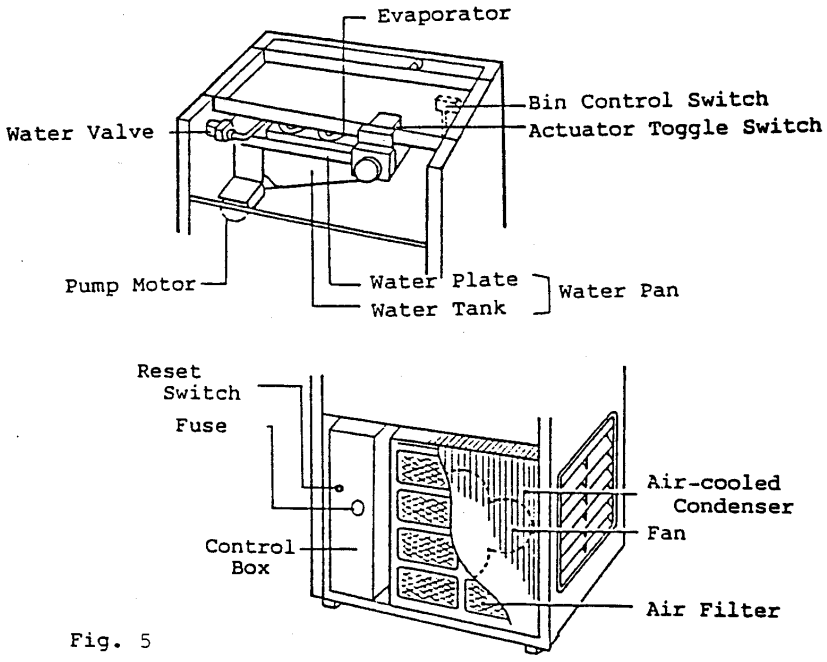


Fig. 5

4. SHUT OFF - for IM-122J

* Close the water supply line shut-off valve.

* Push the Reset Switch on the front of the Control Box.

* Water pan will open and then actuator toggle switch turn to the DEFROST position in 40(forty) seconds. (Click sound will be heard.)

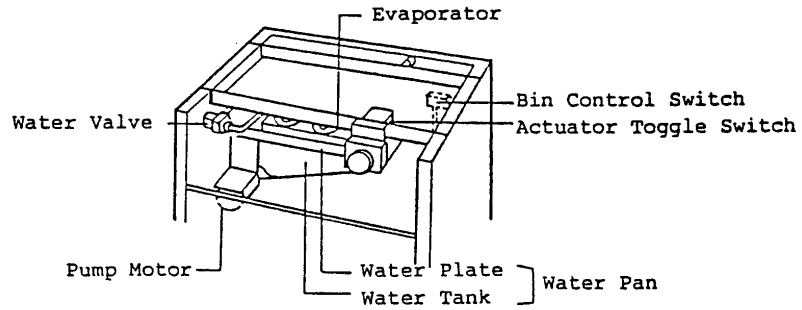
* Unplug the icemaker.

* When shut off the icemaker for a period, drain the water tank and remove ice out of the bin. The storage bin should be cleaned up to dry.

5. START UP - for IM-202J

Check that shipping tape, string and packing are removed before starting the icemaker.

* Open the water supply line shut-off valve and plug in.
* Remove the front panel and move the Control Switch on the control box to the ON position.
* Water pan will open first, and then close into freezing cycle automatically. (See Fig.6)



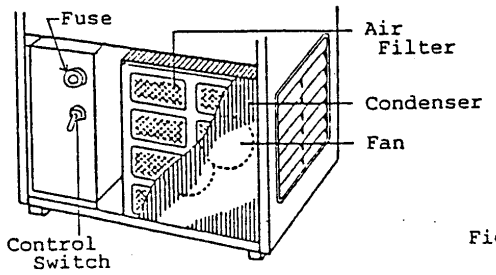


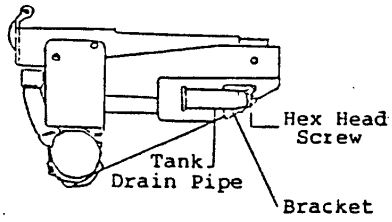
Fig. 6

6. SHUT OFF - for IM-202J

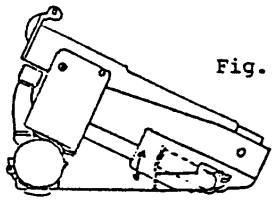
* Close the water supply line shut-off valve.
* Move the control switch to the OFF position and immediately to the ON position to initialize the icemaker.
* Water pan will open and then actuator toggle switch turn to the DEFROST position in 40(forty) seconds. (Click sound will be heard.)
* Move the control switch to the OFF position.
* When shut off the icemaker for a period, drain the water tank and remove ice out of the bin. The storage bin should be cleaned up to dry. (See "Tank Drain Procedure" and Fig. 7)

o Tank Drain Procedure: (See Fig. 7)

* Remove the front panel or upper front panel.
* Move the control switch on the control box to OFF position.
* Locate the water pan assembly. Remove the Hex Head Screw.
* Move the Tank Drain Pipe to DRAIN position.
* Move the control switch to the control box to ON position.
* Trun off the icemaker with the actuator toggle switch DEFROST position.
* Reverse the Tank Drain Pipe to NORMAL position after drain, and secure using the Hex Head Screw.



Normal Position



Drain Position

Fig. 7

o Shut off at sub-freezing temperature

WARNING

Drain the icemaker to prevent damage to the water supply line at sub-freezing temperatures, using a foot pump or hand pump. Shutt off the icemaker until proper air temperature is resumed.

Procedure: (See Fig. 8)

* Close the water supply line shut-off valve.
* Connect a pump and vinyl hose to the drain valve.
* Move the tank drain pipe to DRAIN position, reffering the above "Tank Drain Procedure."
* Move the Control Switch, on the control box, to the OFF position, and then to the ON position to initialize the icemaker.
* Pump and blow the water supply line.
* Move the Control Switch to the OFF position.
* Unplug the icemaker with the actuator toggle switch DEFROST position.

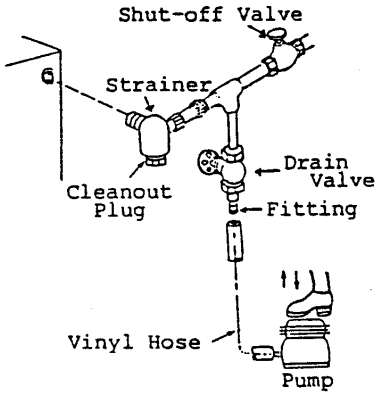
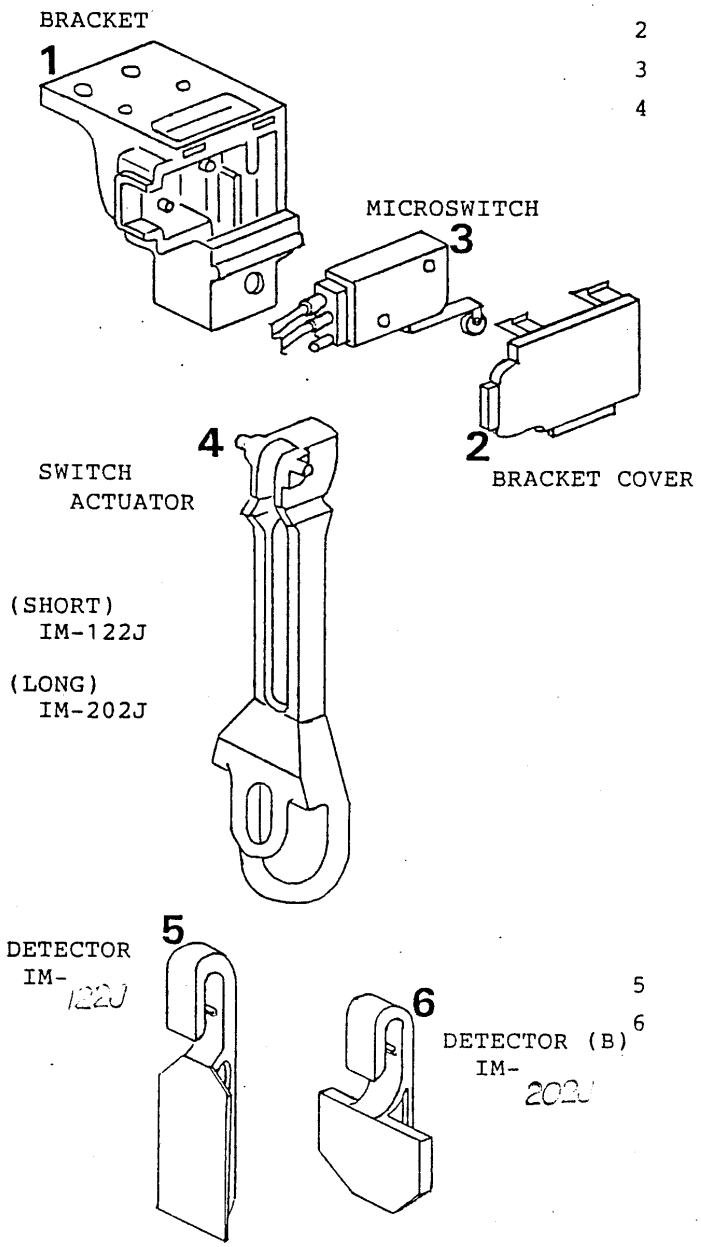


Fig. 8

7 . BIN CONTROL

Bin Control Switch is mounted on the upper side of the bin. This switch will turn off the unit automatically when the bin is full of ice. Handle the Bin Control Switch carefully, because the switch assembly is fragile. Especially on removing ice do not touch or poke with a scoop. Keep away from the water plate or drain pan to prevent jamming. (See Fig. 9)

BIN CONTROL SWITCH ASSEMBLY



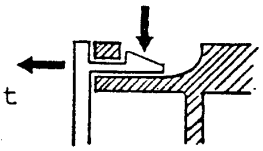
INDEX NO.	PART CODE
1	2H0652-01
2	4H2535-01
3	425731-02
4	3H1369-01 (Short) 3H1369-02 (Long)
5	3H0633-01
6	311044-01

Fig. 9

o REMOVAL

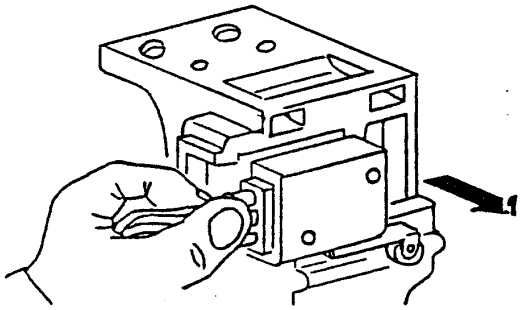
BRACKET COVER

Push 2 (two) pawls and disconnect the bracket cover.



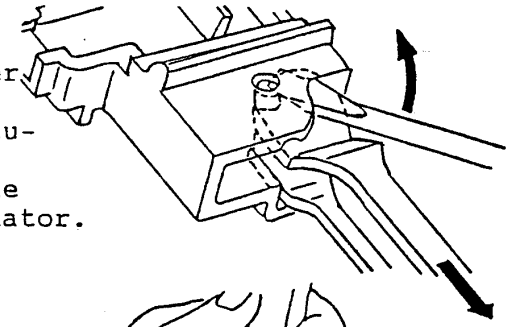
SWITCH

Pull the switch holding the rubber leads cap. HANDLE WITH CARE.



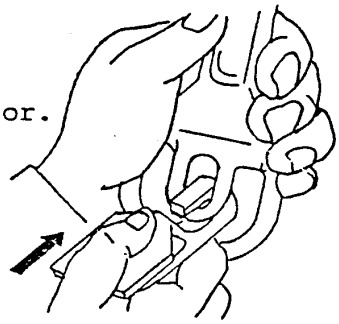
SWITCH ACTUATOR

Insert a (-) screwdriver and wrench slightly. Pull out the switch actuator. HANDLE WITH CARE TO PREVENT DAMAGE to the Cam surface of the actuator.



DETECTOR

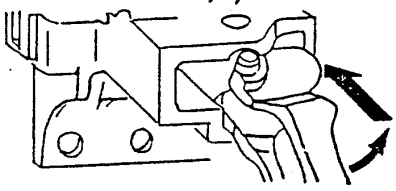
Push out the detector, holding the switch actuator.



o REASSEMBLE

SWITCH ACTUATOR

Insert the lower shaft and push along U Notch. Check that the switch actuator moves free.



SWITCH & BRACKET COVER

Place the switch lever first, and then attach the switch in position.
Insert the guide, then push the bracket cover to lock.

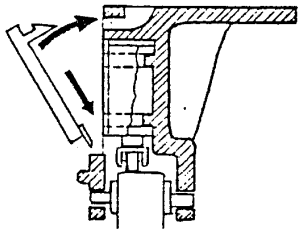
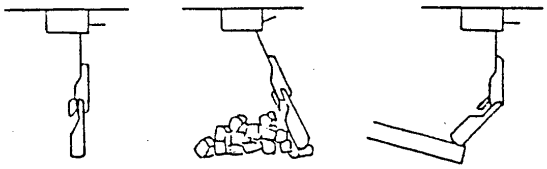


Fig. 10



Running | Bin full (Tripped) | Fragile Keep away from water plate or drain pan.

Fig. 11

III. Maintenance Instructions

* Stainless Steel Exterior

To keep the exterior from rust, wipe occasionally with a clean and soft cloth. Use a damp cloth containing a neutral cleaner to wipe off rust.

* Air Filter

A plastic mesh air filter removes dirt or dust in the air and keeps the condenser from clogging. When the filter gets clogged, the icemaker performance will be reduced. Clean the filter at least twice a month. More frequent cleaning will be required depending on the location. When clogged by oil, use a warm solution containing a neutral cleaner. Be careful not to damage to the mesh.

* Condenser

When the condenser gets clogged by small particles through the air filter, the icemaker performance will be more reduced than the air filter clogged. Clean the condenser at least once a year using a brush or vacuum cleaner. (See Fig.12)

* Strainer (OPTIONAL)

A plastic mesh strainer removes dirt or particles included in the water supply. When the mesh gets clogged, the icemaker will be out of water. Clean the mesh at least once a month. Remove the cleanout plug and use a brush to clean out dirt or particles on the mesh. (See Fig.13)

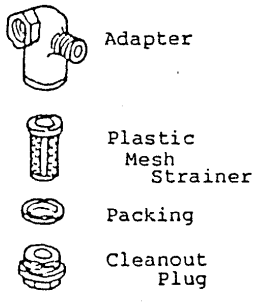


Fig. 13

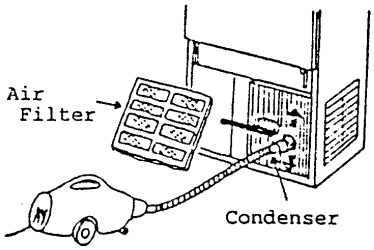


Fig. 12

*CLEANING WATER VALVE

Close the water supply line shut-off valve.

(1) Unplug the icemaker or disconncet the power source.

(2) Remove the Top Panel and Front Panel (Upper).

(3) Disconnect the Fitting Nut from the Water Valve.

(4) Remove the mesh filter from the Water Valve.

(5) Clean the mesh using a brush.

(6) Place the mesh and fitting nut in position.

(7) Open the shut-off valve.

(8) Plug in or connect the power source.

(9) Check for leaks.

(10) Place the panels in position.

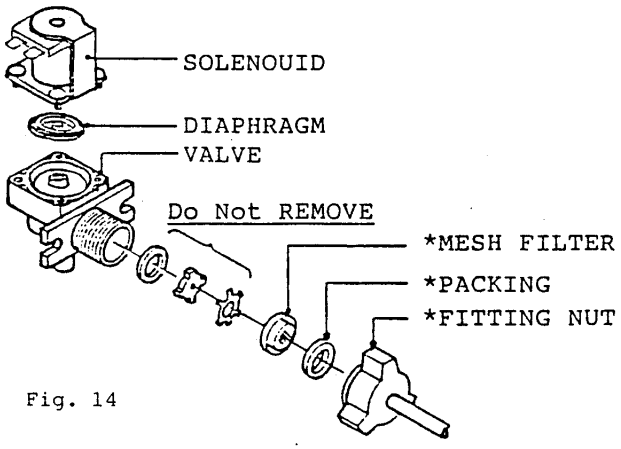
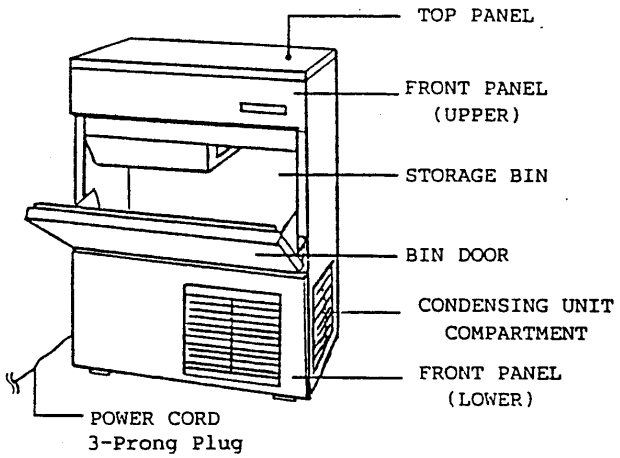


Fig. 14

7. TECHNICAL INFORMATION

1. CONSTRUCTION

IM-122J



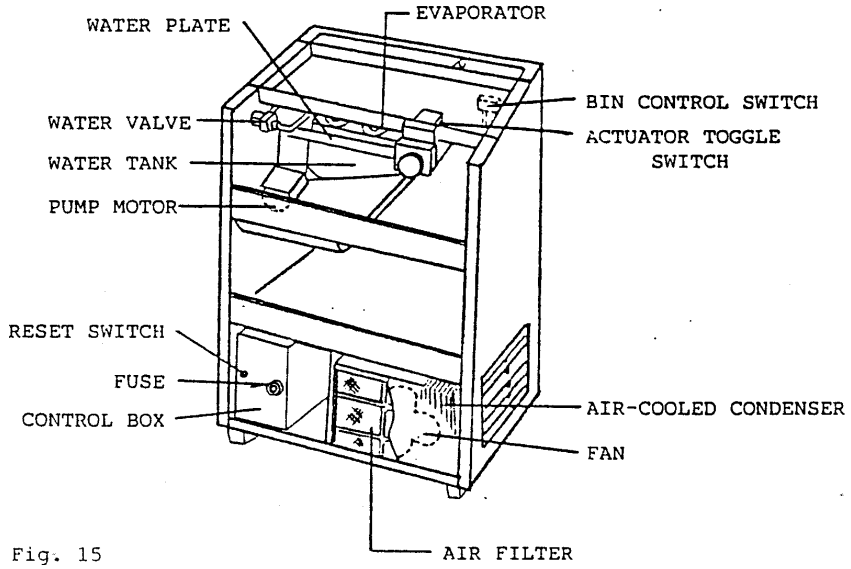
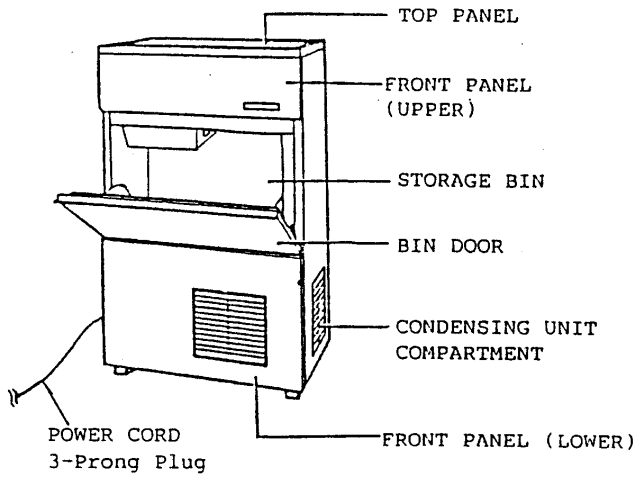
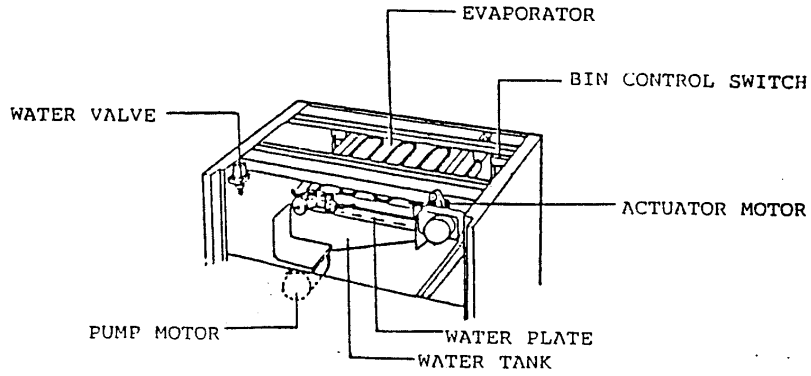


Fig. 15


TOP PANEL
FRONT PANEL
(UPPER)
STORAGE BIN
BIN DOOR
CONDENSING UNIT
COMPARTMENT
POWER CORD
3-Prong Plug
FRONT PANEL (LOWER)


EVAPORATOR
BIN CONTROL SWITCH
WATER VALVE
ACTUATOR MOTOR
PUMP MOTOR
WATER PLATE
WATER TANK

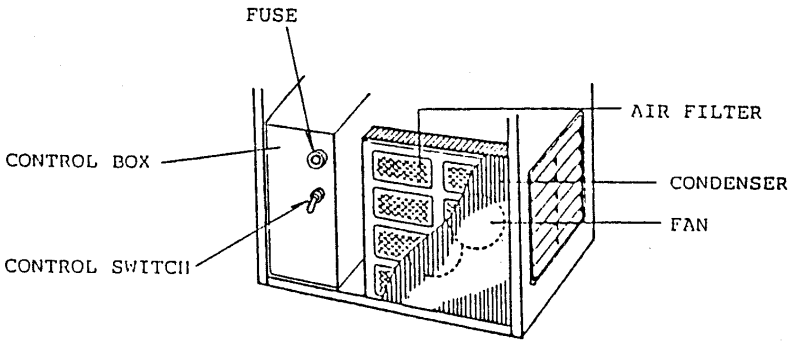

FUSE
AIR FILTER
CONTROL BOX
CONDENSER
FAN
CONTROL SWITCH

Fig. 16

IM-122J

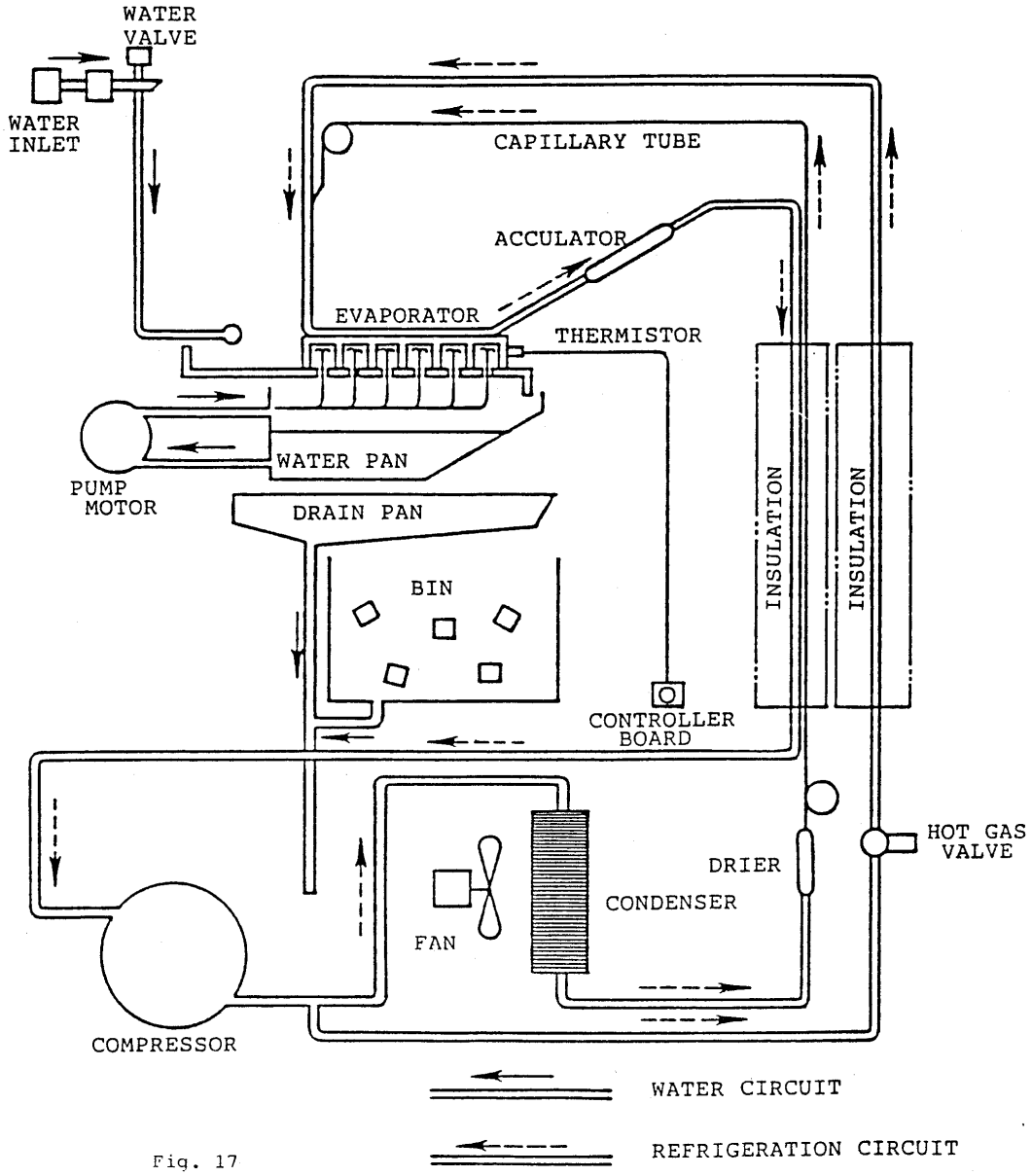


Fig. 17

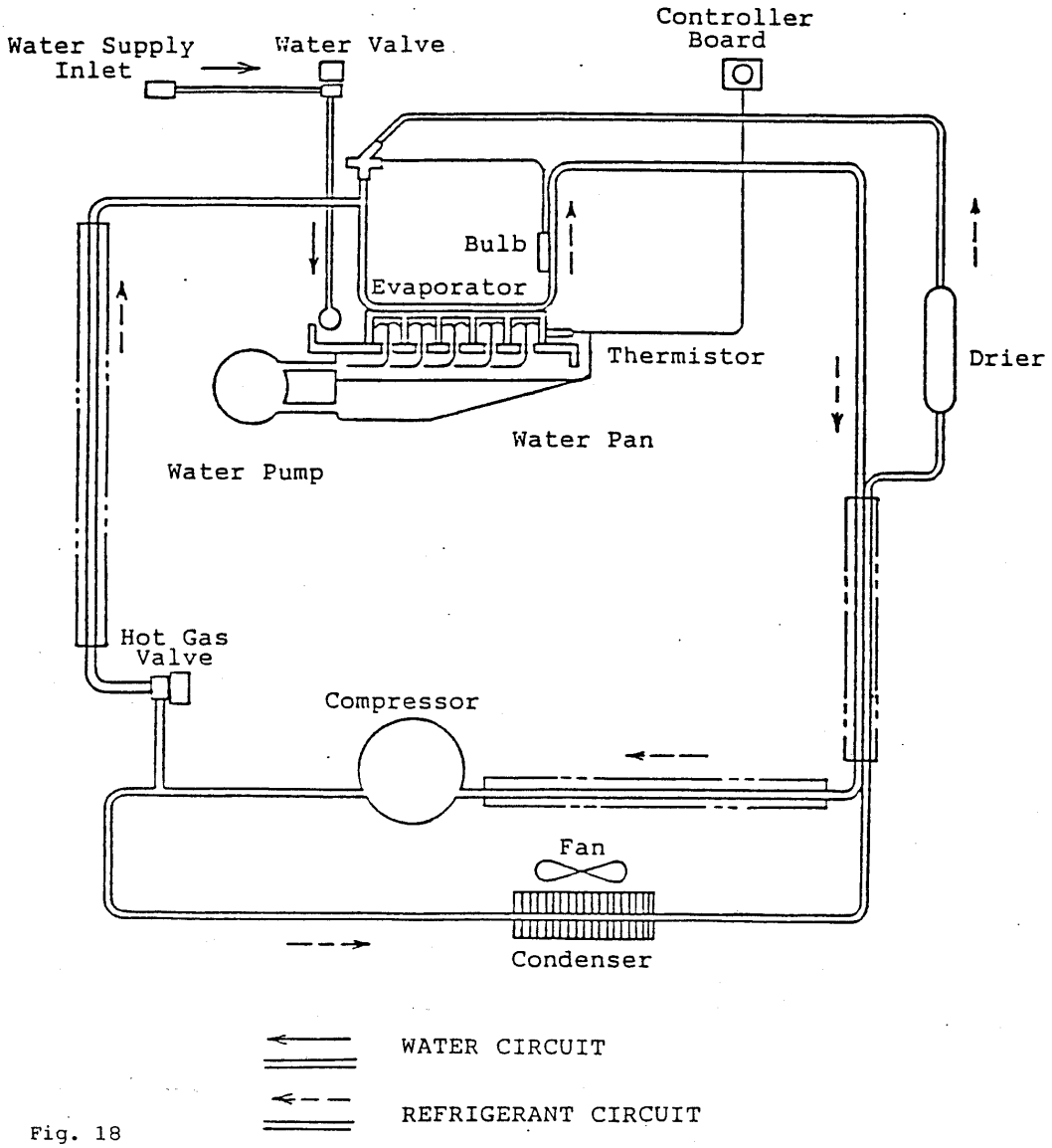
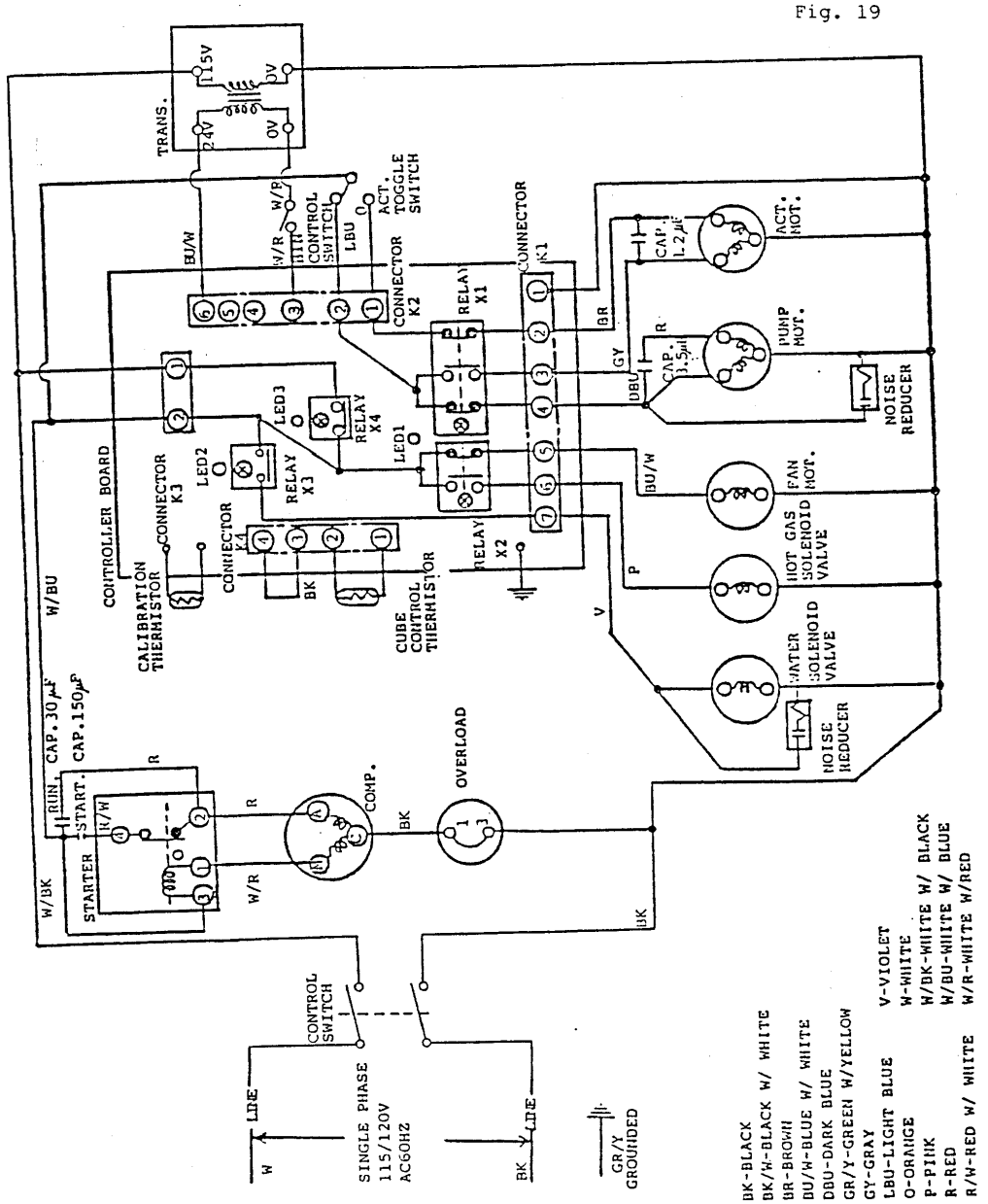
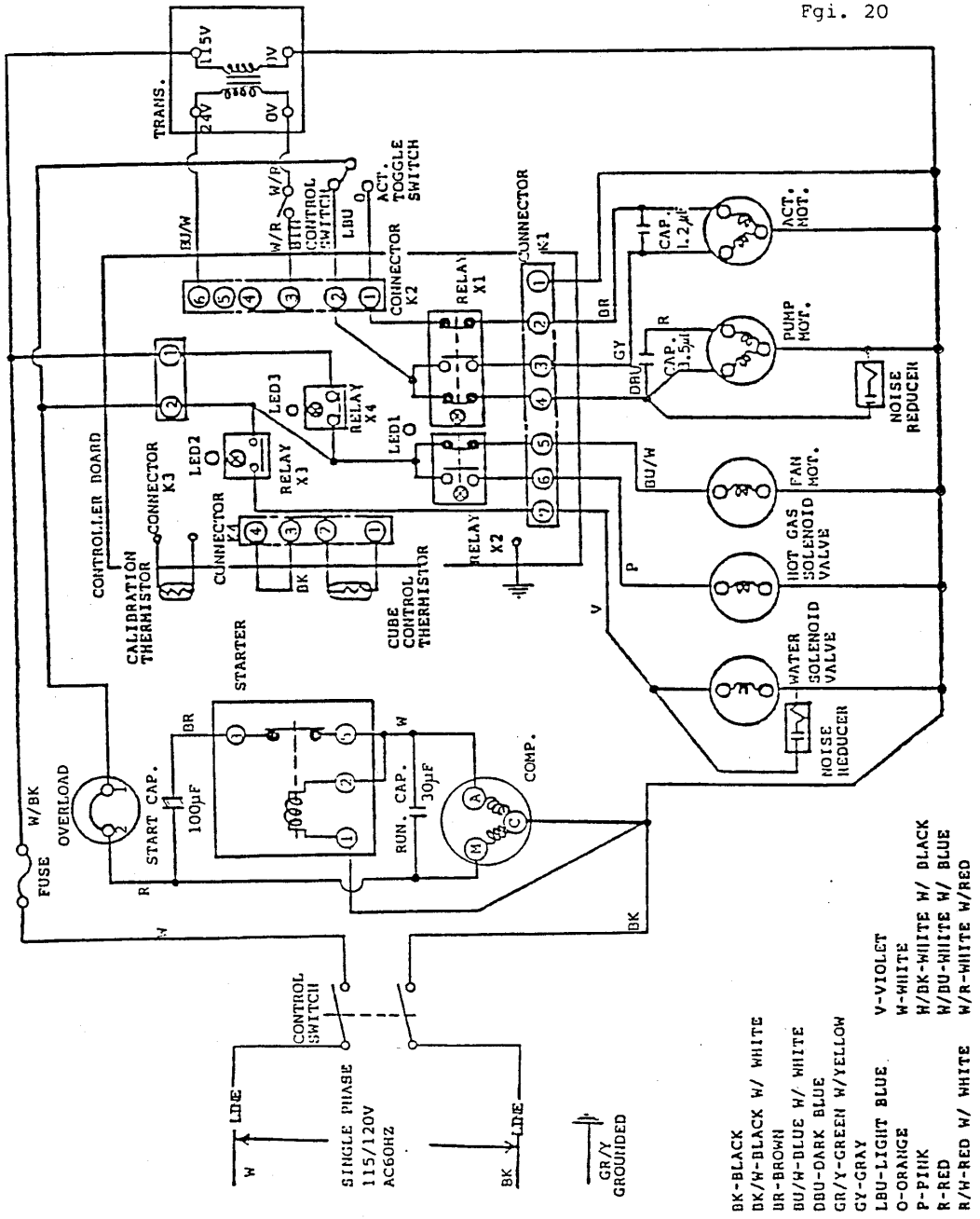

Water Supply Inlet
Water Valve
Controller Board
Bulb
Evaporator
Thermistor
Drier
Water Pan
Water Pump
Hot Gas Valve
Compressor
Fan
Condenser
WATER CIRCUIT
REFRIGERANT CIRCUIT

Fig. 18

Fig. 19


TRANS.
15V
0V
24V
0V
W/BU
W/BK
CAP.30μF
CAP.150μF
RUN
START
R
W/R
STARTER
COMP.
OVERLOAD
BK
CONTROLLER BOARD
CONNECTOR K3
CONNECTOR K4
CALIBRATION THERMISTOR
CUBE CONTROL THERMISTOR
LED1
LED2
LED3
RELAY X1
RELAY X2
RELAY X3
RELAY X4
CONNECTOR K1
CONNECTOR K2
W/P
W/R
BU/W
LBU
ACT. TOGGLE SWITCH
CONTROL SWITCH
BR
GY
DBU
R
CAP. 1.2μF
CAP. 1.5μF
ACT. MOT.
PUMP MOT.
NOISE REDUCER
FAN MOT.
HOT GAS SOLENOID VALVE
WATER SOLENOID VALVE
NOISE REDUCER
P
V
BK
CONTROL SWITCH
LINE
W
SINGLE PHASE
115/120V
AC60HZ
LINE
BK
GR/Y
GROUNDED
BK-BLACK
BK/W-BLACK W/ WHITE
BR-BROWN
BU/W-BLUE W/ WHITE
DBU-DARK BLUE
GR/Y-GREEN W/YELLOW
GY-GRAY
LBU-LIGHT BLUE
O-ORANGE
P-PINK
R-RED
R/W-RED W/ WHITE
V-VIOLET
W-WHITE
W/BK-WHITE W/ BLACK
W/BU-WHITE W/ BLUE
W/R-WHITE W/RED

Fgi. 20


TRANS.
115V
12V
24V
0V
ACT. TOGGLE SWITCH
W/P
W/R
CONTROL SWITCH
LBU
BU/W
CONNECTOR K2
CONNECTOR K1
RELAY X1
RELAY X2
RELAY X3
RELAY X4
LED1
LED2
LED3
CONTROLLER BOARD
CONNECTOR K3
CONNECTOR K4
CALIBRATION THERMISTOR
CUBE CONTROL THERMISTOR
STARTER
OVERLOAD
W/BK
FUSE
START CAP.
100μF
RUN. CAP.
30μF
COMP.
BR
W
R
BK
GY
DBU
P
V
CAP. 1.2μF
CAP. 1.5μF
ACT. MOT.
PUMP MOT.
FAN MOT.
HOT GAS SOLENOID VALVE
WATER SOLENOID VALVE
NOISE REDUCER
NOISE REDUCER
CONTROL SWITCH
LINE
SINGLE PHASE
115/120V
AC60HZ
LINE
GR/Y
GROUNDED
BK-BLACK
DK/W-BLACK W/ WHITE
BR-BROWN
BU/W-BLUE W/ WHITE
DBU-DARK BLUE
GR/Y-GREEN W/YELLOW
GY-GRAY
LBU-LIGHT BLUE
O-ORANGE
P-PINK
R-RED
R/W-RED W/ WHITE
V-VIOLET
W-WHITE
H/BK-WHITE W/ BLACK
W/BU-WHITE W/ BLUE
W/R-WHITE W/RED

4. CONTROLLER BOARD

a. CONTROLLER BOARD

Controller Board

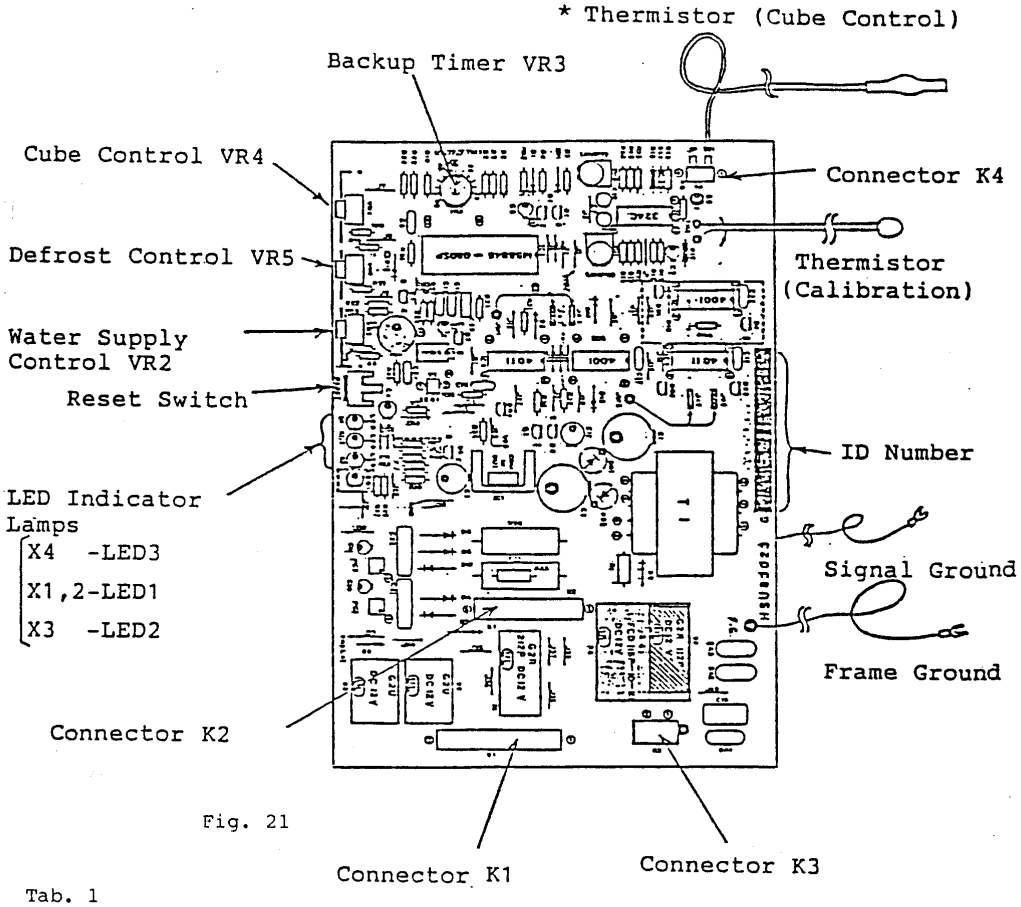


Fig. 21

Tab. 1

Model	ID No.	Thermistor (Calibration)
IM-122J	G05	Yes
IM-202J	**G06	Yes
IM-442DJ	G07	No

Note; *Thermistor (Cube Control) Order Number.

IM-122J, -202J	425373-03
IM-442DJ	425673-04

**G06 Type board is supplied as SERVICE PARTS KIT.
G05 and G07 Type will not be supplied.
Order the Service Part by 425495-06.

b. SEQUENCE - LED INDICATORS ON/OFF PATTERN

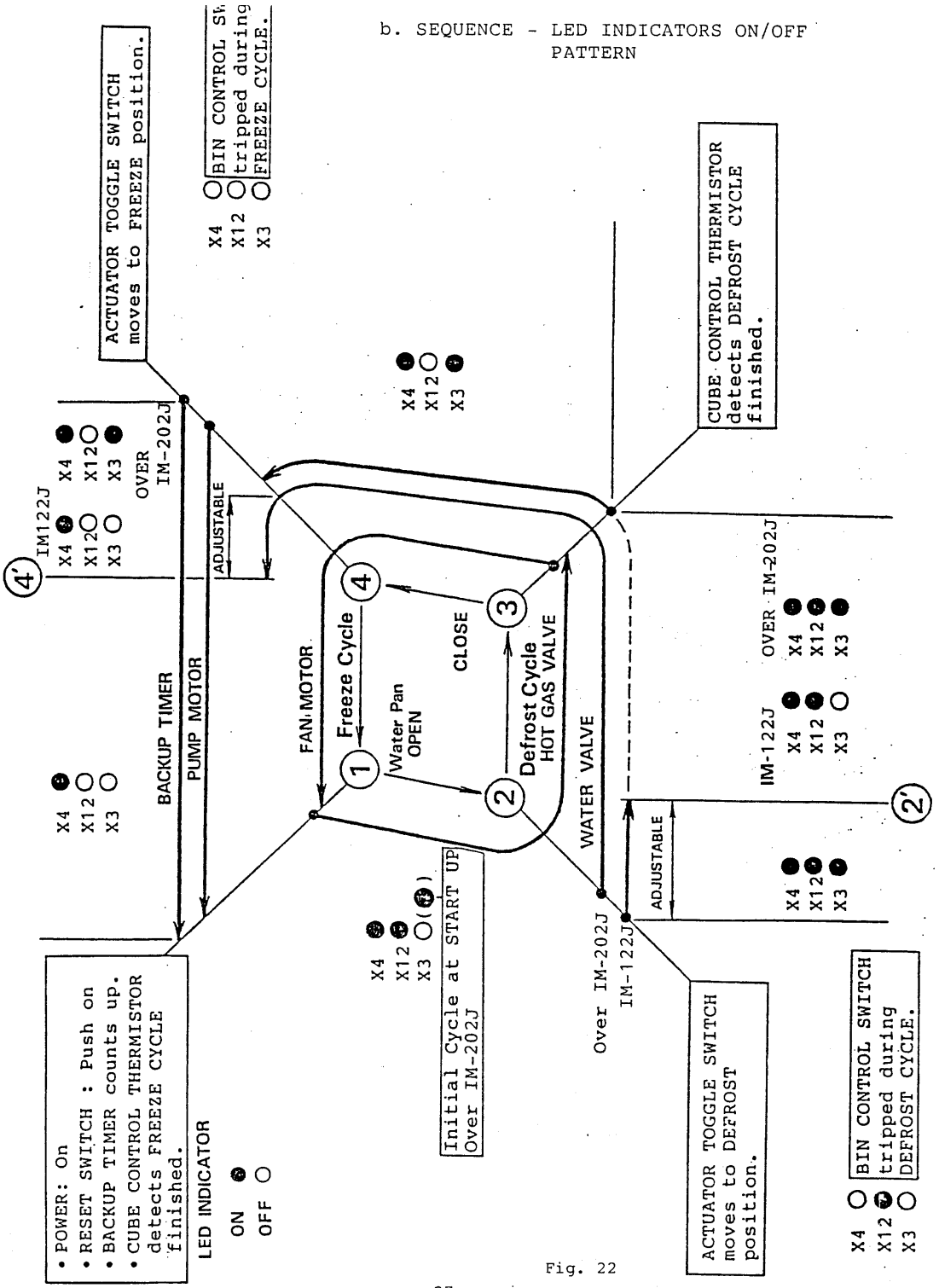


Fig. 22

o A label, located on the reverse of Control Box Cover, shows a Schimatic of the Controller Board.

VR: Variable Resistor
No.2 through No.5 adjustable

K: Connector

⑦ K1 ① Connector No.1
With 7 (seven) pins
① Pin No.1

IC: Integrated Circuit Chip

JW: Jumper Wire

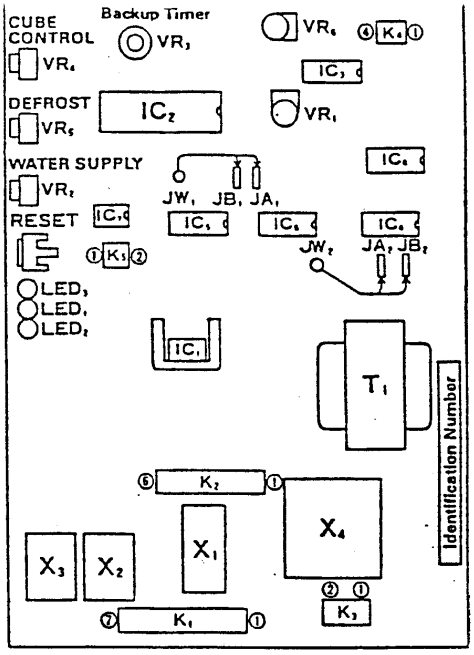
LED: Light Emitting Diode
Indicator Lamp

T: Transformer

X: Relay

RESET: Reset Switch

Push a botton only during FREEZE CYCLE when replace a board or check operation.



NOTE
- No wire must be connected to K5 connector.
- Do not adjust VR1 and VR6 variable resistance.
- Controller Board must be identified by the printed identification number.

(Ex.) Identification Number
HSU83023G05
Mfr's. Model Suf.

Suf.	Jumper		Thermister	Models
	JW1	JW2		
05	JB1	JB2	Yes	IM-122J
06	JA1	JA2	Yes	IM-202J
07	JA1	JA2	No	IM-442DJ

Fgi. 23

Fig. Controller Board Schematic

Relay

X1 - ACTUATOR MOTOR and PUMP MOTOR

X2 - HOT GAS VALVE and FAN MOTOR

X3 - WATER VALVE

X4 - COMPRESSOR

Control

VR2 – WATER SUPPLY

VR3 - BACKUP TIMER

VR4 - CUBE

VR5 - DEFROST

All controls are Factory Adjusted. Do not change setting, except when replace a board or setting changed. Refer to "Adjustment".

1. Water Supply Mode

Tab. 2

Controller Board	Mode	Model
G05	B	IM-122J
G06	A	IM-202J
G07	A	IM-442DJ

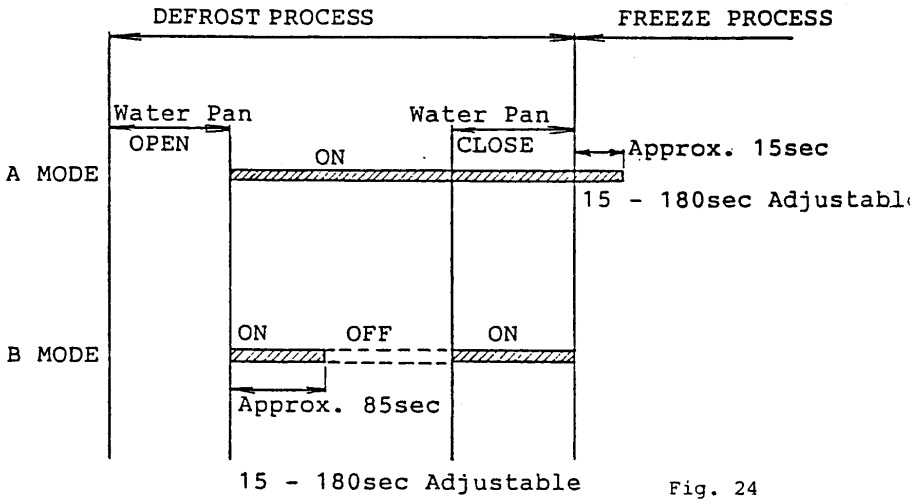


Fig. 24

5. Adjustment - for IM-122J

1. Cube Control

A cube control on the Controller Board is factory adjusted to produce constant cubes all year around. When the user needs ice cubes with smaller or larger diameter hole, Service Personels should adjust the Cube Control on the board as follows.

1) Adjust a Variable Resistor VR4 (CUBE CONTROL) using a miniature (-) screwdriver.

2) For smaller hole cubes, adjust a Variable Resistor VR2 (WATER SUPPLY CONTROL) using a miniature (-) screwdriver.

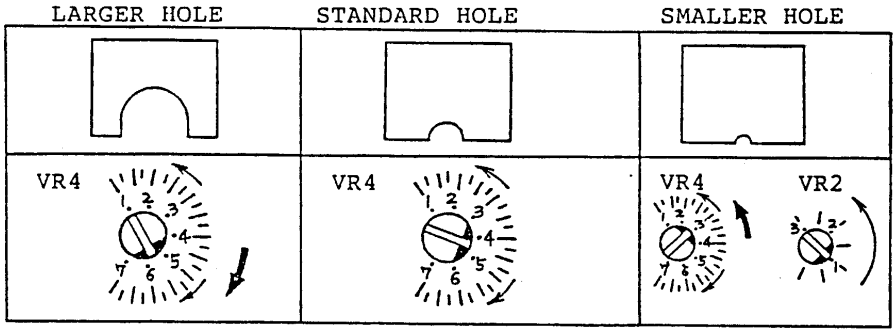


Fig. 25

2. Backup Timer

A backup timer functions to stop the freezing process on the way, when an ambient temperature is higher or air filter gets clogged (Freeze cycle time will be too long). Factory setting is approximately 45 minutes. Any adjustment will not be required under normal use.

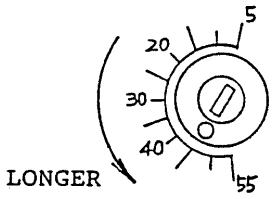


Fig. 26

3. Defrost Control

A defrost control functions to control a period between ice-drop and actuator motor restart.
Any adustment will not be required for normal operation.
Factory setting are shown in the table below.
When service or replace the controller board, adjust a Variable Resistor VR5 using a miniature (-) screwdriver.

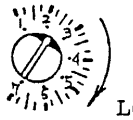


Fig. 27

Table-Approximate Period (sec)

Ambient °F	Period
90	20
70	40
50	60

Tab. 3

4. Water Supply Control

A water supply control functions to control the water solenoid valve operation. No adjustment will be required except when service or replace the Controller Board.
Use a miniature (-) screwdriver to adjust a Variable Resistor VR2 (WATER SUPPLY CONTROL).

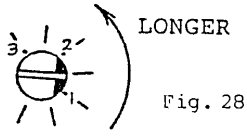


Fig. 28

6. Adjustment - for IM-202J

1. Cube Control

A cube control on the Controller Board is factory adjusted to produce constant cubes all year around. When the user needs ice cubes with smaller or larger diameter hole, Service Personels should adjust the Cube Control on the board as follows.

1) Adjust a Variable Resistor VR4 (CUBE CONTROL) using a miniature (-) screwdriver.

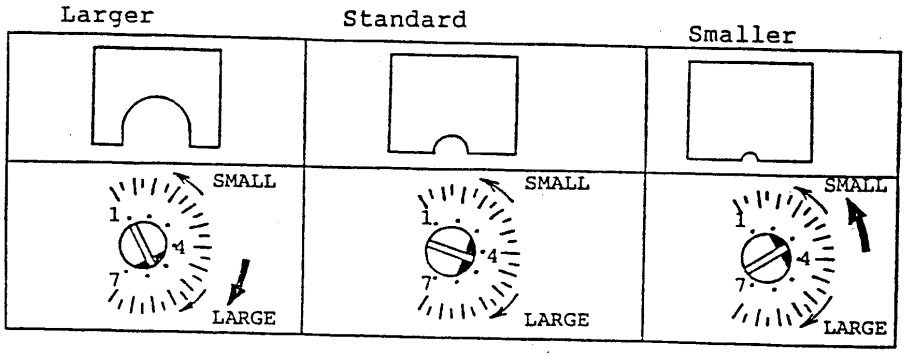


Fig. 29

2. Backup Timer

A backup timer functions to stop the freezing process on the way, when an ambient temperature is higher or air filter gets clogged (Freeze cycle time will be too long). Factory setting is approximately 40minutes. Any adjustment will not be required under normal use.

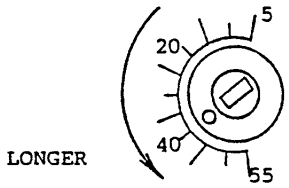


Fig. 30

3. Defrost Control

A defrost control functions to control a period between ice-drop and actuator motor restart.
Any adustment will not be required for normal operation.
Factory setting are shown in the table below.
When service or replace the controller board, adjust a Variable Resistor VR5 using a miniature (-) screw-driver.

Fig. 31

Table- Approximate Period (sec)

Ambient °F	Period
90	20
70	40-50
50	70

Tab. 4

4. Water Supply Control

A water supply control functions to control the water solenoid valve operation. This control is factory adjusted, setting the shortest (15 sec). Any adjustment will not be required for normal use.

*In HIGH-HARDNESS areas, adjust a Variable Resistor VR2 using a miniature (-) screwdriver. Our recommended setting is approximately 90sec.

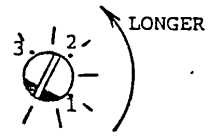


Fig. 32 WATER SUPPLY (minute)

o Rotate adjust screw counter-clockwise to 1.5minutes.

Note; Hardness exceeds 250ppm $CaCO_3$, resulting in CLOUDY CUBES and SCALE building up in the Water System.

Also, the Water Tank must be adjusted into Drain Position to prevent a concentration of Calcium Carbonate, etc. (See Fig. 33)

o Remove HEX BOLT and rotate OVERFLOW PIPE to Drain Position.

o Secure OVERFLOW PIPE with HEX BOLT.

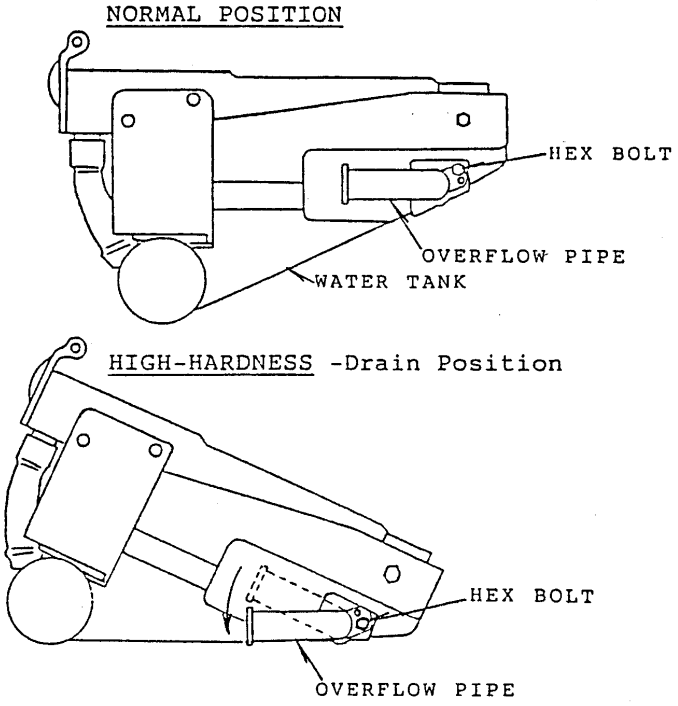


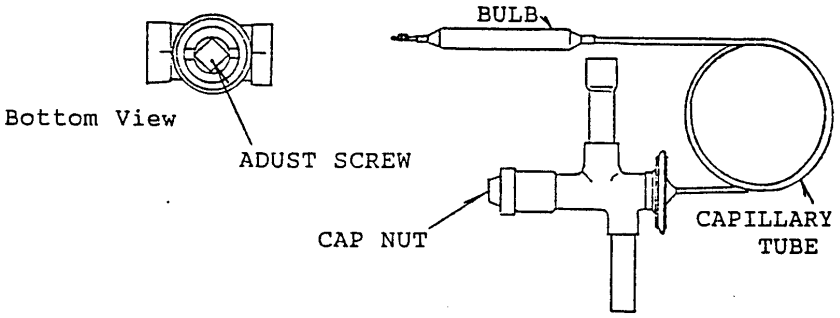
Fig. 33

Adustment - for IM-202J

5. EXPANSION VALVE

The EXPANSION VALVE is factory adjusted. DO NOT adjust except when replace or service. Adjust the valve setting as follows.

1. Remove the Cap Nut.
2. Rotate the Adjust Screw, using a Cap Nut as a SOCKET tool.
3. Watch holes of ice cubes produced. Standard setting is that Evaporator Inlet Side and Outlet Side cubes have almost same diameter. When Inlet side larger, rotate 90 - 180° Clockwise. When smaller, Counter-clockwise. Do not rotate more than 180° at a time. Check if liquid refrigerant returns into the Compressor Suction Pipe. When Liquid Back, the Suction Line will be frozen up, resulting in SEVERE DAMAGE to the compressor.

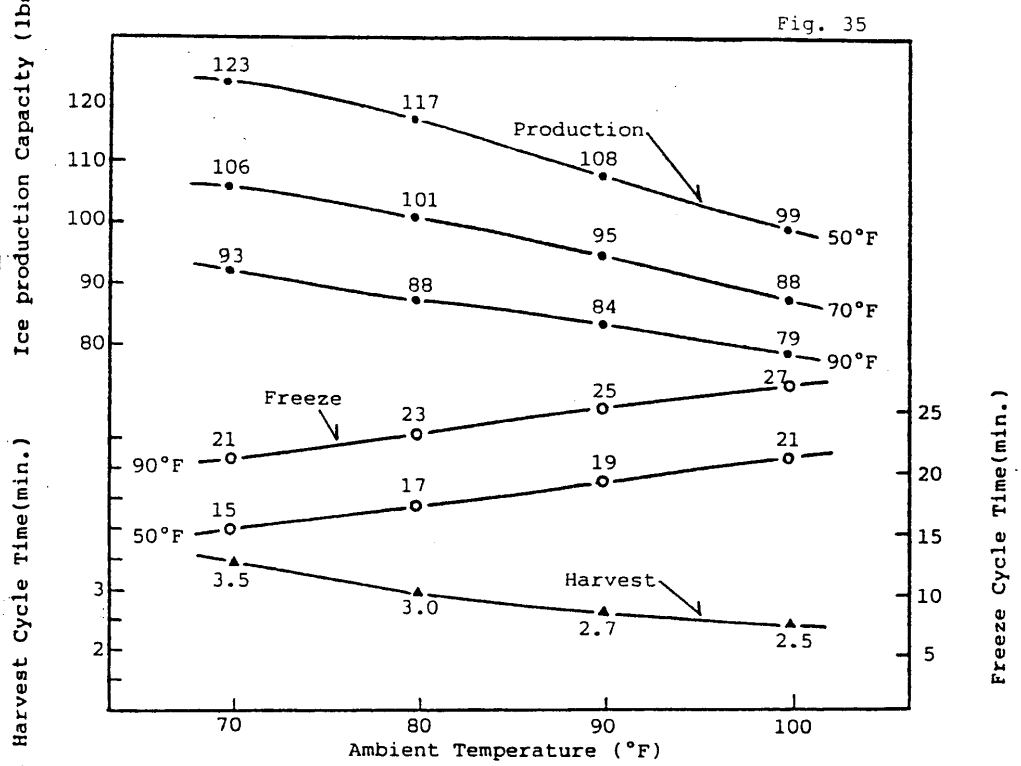


Fgi. 34

PERFORMANCE DATA

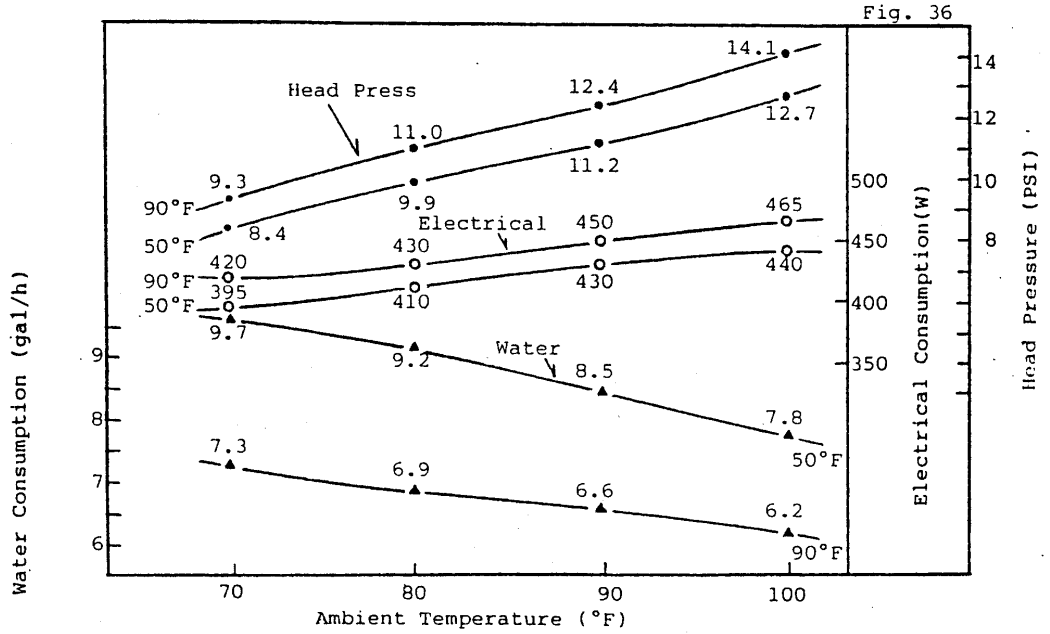
MODEL IM-122J-25

Fig. 35



NOTE; ALLOW 10% VARIATION FROM DATA FOR ERRORS IN TEST EQUIPMENT.

Fig. 36



IM-122J-25

Ice Production Capacity & Freeze Cycle Time

Tab. 5

WATER / AIR	50°F	70°F	90°F
70°F	123 lbs/D	106	93
	15 min.	18	21
80°F	117	101	88
	17	20	23
90°F	108	95	84
	19	22	25
100°F	99	88	79
	21	24	27

Water & Electrical Consumption

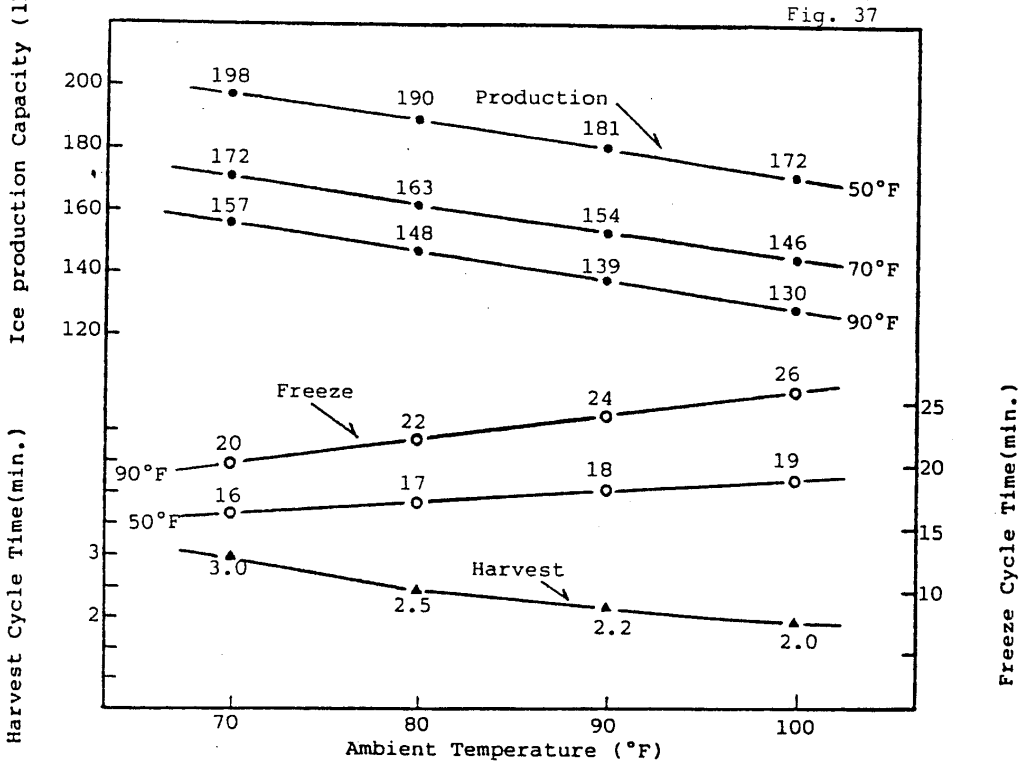
Tab. 6

WATER / AIR	50°F	70°F	90°F
70°F	9.7 gal/h	8.3	7.3
	395 W	410	420
80°F	9.2	8.0	6.9
	410	420	430
90°F	8.5	7.4	6.6
	430	440	450
100°F	7.8	6.9	6.2
	440	450	465

PERFORMANCE DATA

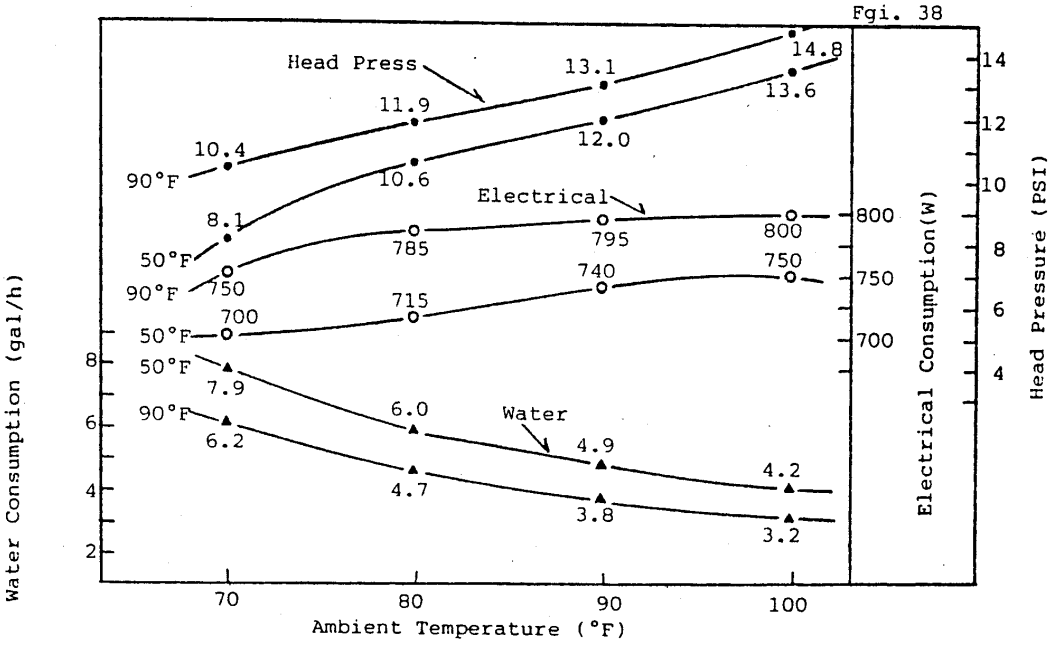
MODEL IM-202J-21

Fig. 37



NOTE; ALLOW 10% VARIATION FROM DATA FOR ERRORS IN TEST EQUIPMENT.

Fgi. 38



IM-202J-21

Ice Production Capacity & Freeze Cycle Time

Tab. 7

WATER / AIR	50°F	70°F	90°F
70°F	198 lbs/D	172	157
	16 min.	18	20
80°F	190	163	148
	17	20	22
90°F	181	154	139
	18	22	24
100°F	172	146	130
	19	23	26

Water & Electrical Consumption

Tab. 8

WATER / AIR	50°F	70°F	90°F
70°F	7.9 gal/h	6.8	6.2
	700 W	740	750
80°F	6.0	5.2	4.7
	715	755	785
90°F	4.9	4.2	3.8
	740	770	795
100°F	4.2	3.5	3.2
	750	795	800

TROUBLE	POSSIBLE CAUSE		REMEDY
Icemaker will not start.	POWER SOURCE	OFF position	Move to ON position
		Loose connection Misconnection	Connect correctly
		Poor contacts	Replace
	CONTROL SWITCH (Breaker)	Tripped	Reset
	POWER CORD	Loose connection	Connect correctly
		Open circuit	Repair or replace
	STORAGE BIN	Filled with ice	Remove ice
	BIN CONTROL	Out of position	Place in position
		Defective	Replace
	CONTROLLER BOARD	See "Checking Controller Board".	
Compressor will not start.	COMPRESSOR CIRCUIT	Loose connection or broken wire	Repair or replace
	OVERLOARD	Defective	Replace
	STARTER	Defective	Replace
	STARTING CAPACITOR	Defective	Replace
	RUNNING CAPACITOR	Defective	Replace
	COMPRESSOR	Defective	Replace
	VOLTAGE	Low voltage	Use correct voltage
	REFRIGERANT CHARGE	Overcharge	Blow refrigernt or recharge
	AIR FILTER, CONDENSER	Clogged	Clean
	TEMPERATURE	Ambient too high	Cool the location site
Compressor runs intermittently.	CONTROLLER BOARD	See "Checking Controller Board".	

TROUBLE	POSSIBLE CAUSE		REMEDY
Compressor runs, but other components will not start.	CONTROL CIRCUIT	Loose connection or broken wire	Repair or replace
	TRANSFORMER	Open circuit	Replace
	FUSE (CONTROL CIRCUIT)	Blown fuse	Replace
Fan Motor will not run.	Wiring	Loose connection or broken wire	Repair or replace
	ACTUATOR TOGGLE SWITCH	Defective	Replace
	THERMISTOR, CONTROLLER BOARD	See "Checking Controller Board".	
Out of water.	WATER SUPPLY LINE	Clogged or low pressure	Clean or use correct pressure
	WATER VALVE	Clogged	Clean, refer to "Maintenance"
	THERMISTOR, CONTROLLER BOARD	See "Checking Controller Board".	
Too much water in water tank.	WATER VALVE	Defective or clogged	Replace or clean, refer to "Maintenance".
	THERMISTOR, CONTROLLER BOARD	See "Checking Controller Board".	
Pump Motor will not run.	WIRING	Loose connection or broken wire	Repair or replace
	ACTUATOR TOGGLE SWITCH	Defective	Replace
	CONTROLLER BOARD	See "Checking Controller Board".	
	PUMP MOTOR	Defective	Replace
	MECHANICAL SEAL	Burned friction surface	Replace

TROUBLE	POSSIBLE CAUSE		REMEDY
Pump Motor, Fan Motor or Actuator Motor cotinues to run.	ACTUATOR TOGGLE SWITCH	Defective	Replace
	THERMISTOR, CONTROLLER BOARD	See "Checking Controller Board".	
Slab does not braek into separate cubes.	EXTENSION SPRING	Over-extended	Replace
	CLEARANCE (Between Evap-orator & Water Plate)	Too much	Readjust
	EVAPORATOR	Dirty or scale built up	Clean or remove scale
		Defective	Replace
	THERMISTOR, CONTROLLER BOARD	See "Checking Controller Board".	
Icemaker will not stop when Bin filled with ice.	BIN CONTROL SWITCH	Out of position	Place in position
		Defective	Replace
	CONTROLLER BOARD	See 'Checking Controller Board".	
Abnormal noise.	PUMP MOTOR	Bearing worn out	Replace
	ACTUATOR MOTOR	Gears worn out	Replace
	FAN MOTOR	Bearing worn out	Replace
	COMPRESSOR	Bearing worn out or Cylinder Valve broken	Replace
Ice storage often melts.	BIN DRAIN	Clogged or back-flow	Clean or repair

1.Checking Controller Board

IMPORTANT

When received a service call, ask the user to TURN OFF THE ICEMAKER AND TURN ON AGAIN, watching the icemaker. In some cases, proper operation will be resumed by this.

CAUTION

1. Check that the icemaker has been grounded properly. When not grounded, the Controller Board will not work properly.

2. Do not change wiring and connections. When changed, the Controller Board will not work normally.

3. Do not touch the board reverse and tiny electronic devices on the Controller Board.

4. Do not fix the electronic devices and parts on the Controller Board in the field. Replace the hole board assembly when it goes bad.

5. To get static free, always touch the metal part of the icemaker before service, because ELECTRO-STATIC DISCHARGE will cause severe damage to the Controller Board.

6. A Signal Ground wire and Frame Ground wire must be connected to the Shield Plate and the Control Box Base respectively, when place the Controller Board after service.

7. Always remove the Frame Ground wire, when check the INSULATION RESISTANCE and DIELECTRIC WITHSTANDING.

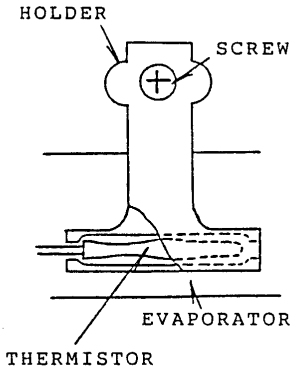
8. The Controller Board is FRAGILE. HANDLE WITH CARE.

   - o Do not drop the board on the floor.
   - o Insert and place the board along the Guides in the Control Box. When out of position and covered, the board will be broken.
   - o Hold the board on sides when handling it. Do not touch electronic parts and devices except Transformer.

2. Before Checking Controller Board

Check for Power Source Voltage and components as shown in the table.

Tab. 9

Component	Procedure	Normal
1. Actuator Toggle Switch 	Manually set the switch in the FREEZE and HARVEST positions, and check CONTINUITY.	DEFROST COM-NO OPEN COM-NC CLOSE FREEZE COM-NO CLOSE COM-NC OPEN
2. Thermistor (on Evaporator) 	CAUTION Thermistor SENSOR part is FRAGILE, glass sealed. HANDLE WITH CARE. * Disconnect the Connector K4 on the board. *Remove screw and thermistor Holder on the evaporator. *Immerse the Sensor part in a glass containing Ice and Water for 5 minutes. *Check a RESISTANCE between K4 Connector Pins. *Place the Thermistor in position. *Connect K4.	5 - 7kilo-ohm
3. Bin Control Switch	Manually set the Micro Switch in the TRIP and RESET positions, and check a PERIOD.	Approx. TRIP 10sec RESET 80sec

o Visually check the LED INDICATORS located next to Variable Resistors VR4 to VR2 (CUBE, DEFROST and WATER SUPPLY controls) on the Controller Board.

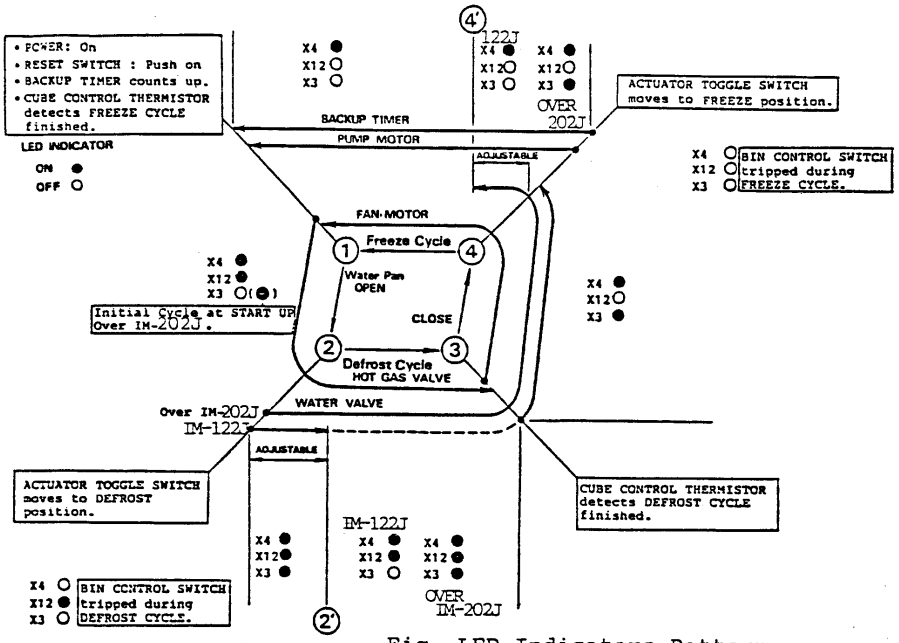


Fig. 39 Fig. LED Indicators Pattern.

o Three LEDs blink as SEQUANCIAL operation progresses step by step, showing ON-OFF paterns.

o Locate the CONNECTORS and Connectors' PIN NUMBER and check VOLTAGE of the Components using a Tester (Range 250V AC).

Tab. 10

Sequence			LED Indicators			Voltage Check					
			LED3 X4	LED1 X1,2	LED2 X3	PUMP	ACTUAT MOT	FAN MOT	HOT GAS	WATER	COMP
BASIC	1 — 2	Water Pan open	●	●	o	0V	*115V	0V	115V	0V	115V
	2 3	Defrost Cycle	●	●	●	0V	0V	0V	115V	115V	115V
	3 4	Water Pan close	●	o	●	0V	**115V	115V	0V	115V	115V
	4 1	Freeze Cycle	●	o	●	115V	0V	115V	0V	115V	115V
			● Initial	o	o	115V	0V	115V	0V	0V	115V
			● Normal								
IM-122J	1 — 2	Water Pan open	●	●	o	0V	*115V	0V	115V	0V	115V
	2 2'	Defrost Cycle	●	●	●	0V	0V	0V	115V	115V	115V
	2' 3		●	●	o	0V	0V	0V	115V	0V	115V
	3 4	Water Pan close	●	o	●	0V	**115V	115V	0V	115V	115V
	4 1	Freeze Cycle	●	o	o	115V	0V	115V	0V	0V	115V
OVER IM-202J	1 — 2	Water Pan open	●	●	●	0V	*115V	0V	115V	115V	115V
			● Initial	●	o	0V	*115V	0V	115V	0V	115V
			● Normal								
	2 3	Defrost Cycle	●	●	●	0V	0V	0V	115V	115V	115V
	3 4	Water Pan Close	●	o	●	0V	**115V	115V	0V	115V	115V
	4 4'	Freeze Cycle	●	o	●	115V	0V	115V	0V	115V	115V
	4' 1		●	o	o	115V	0V	115V	0V	0V	115V

Table: Connector and Pin Number

PUMP MOTOR	K1 PIN1 - PIN4
ACTUATOR MOTOR	*K1 P1 - P3 **K1 P1 - P2
FAN MOTOR	K1 P1 - P5
HOT GAS VALVE	K1 P1 - P6
WATER VALVE	K1 P1 - P7
COMPRESSOR	K1 P1 - K3 P2

4. Replacement

IMPORTANT

Single type controller board is supplied as SERVICE BOARD. Some modifications and adjustment will be required to fit the ice maker models.

Do not repair any parts and electronic devices on the Controller Board in the field. Replace the hole board into a new Service Board.

Modification

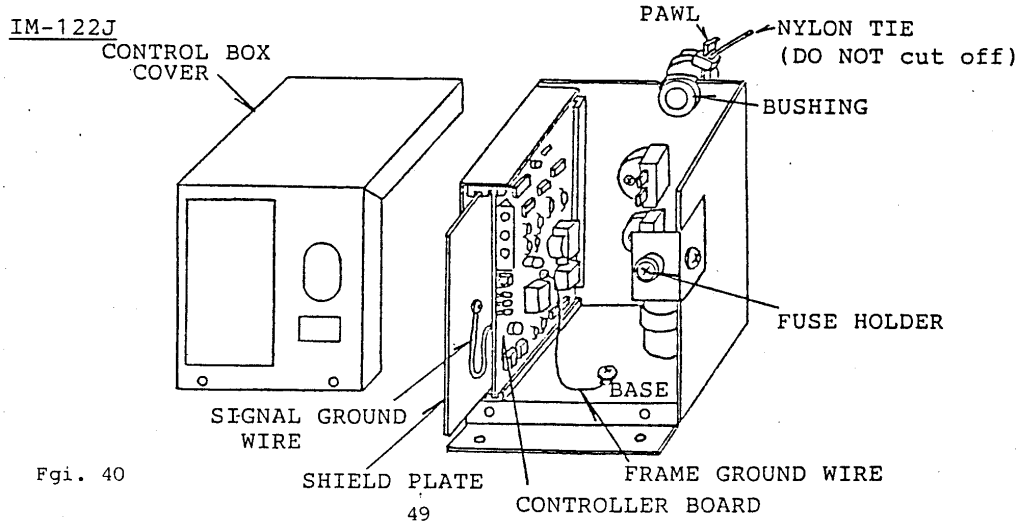
- Check that a SERVICE BOARD package includes

* Controller Board	1 Pc.
* Label	1 Pc.
* Instruction Sheet	1 Pc.

- Modify the Service Board referring to the Instruction Sheet provided.

Replacement

1. Remove the Front Panel (Lower).
2. Unplug the icemaker or disconnect the power source.
3. Remove screws and the Control Box Cover.
4. Pull the Shield Plate slightly toward you, and disconnect the Signal Ground wire.
5. Disconnect the Frame Ground wire.
6. Push the pawl of the Nylon Tie and loosen it. Do not cut off the Nylon Tie.
7. Cut off the nylon tie holding the Frame Ground wire and Thermistor (Calibration) in the Control Box.
8. Pull out the Controller Board half, and disconnect the Connectors K1, K2, K3 and K4.
9. Pull out and remove the controller board from the control box.
10. Install a new Controller Board and reassemble the control box in reverse order.



Fgi. 40

5. Adjustment

- o Plug in or turn on the power source.
- o Adjust the VR4 (CUBE CONTROL) and the VR5 (DEFROST CONTROL) referring to "Adjustment".

6. Check List

1. SIGNAL GROUND and FRAME GROUND installed?
2. Ambient CALIBRATION THERMISTOR located as shown in the Fig.?

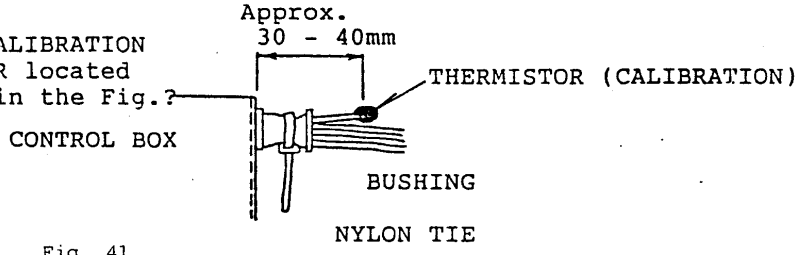
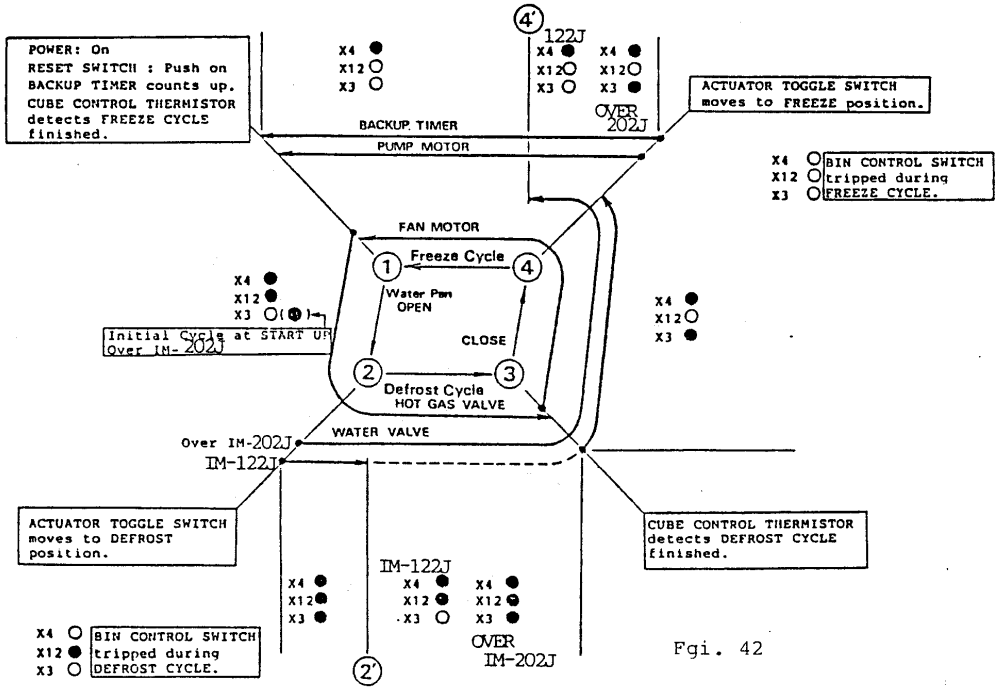


Fig. 41 Fig. Thermistor Location

3. NYLON TIE tightened to prevent dust, tiny insects and water entering into the Control Box?
4. BOARD SEQUENCE and COMPONENTS operate nomally?

Fig. Normal Sequence



Fgi. 42

II. REMOVAL AND REPLACEMENT

1. REMOVAL AND REPLACEMENT OF THERMISTOR FOR CUBE CONTROL

(1) Unplug the icemaker or disconnect the power source.
(2) Remve the Top Panel, Front Panels and Pipe Cover (rear).
(3) Remove the Connector K4 on the CONTROLLER BOARD, refering to "Replacement of Controller Board".
(4) Unscrew and remove the Thermistor Holder and Thermistor, located on the Evaporator (Front side).
(5) Install a new thermistor in reverse order, using a *SEALANT (HIGH-HTERMAL CONDUCT TYPE). See Fig.

NOTE; * RECOMMENDED SEALANT is KE4560RTV, manufactured by SINETSU SILICON. When other type sealant used, CUBE SIZE and PERFORMANCE will be changed.

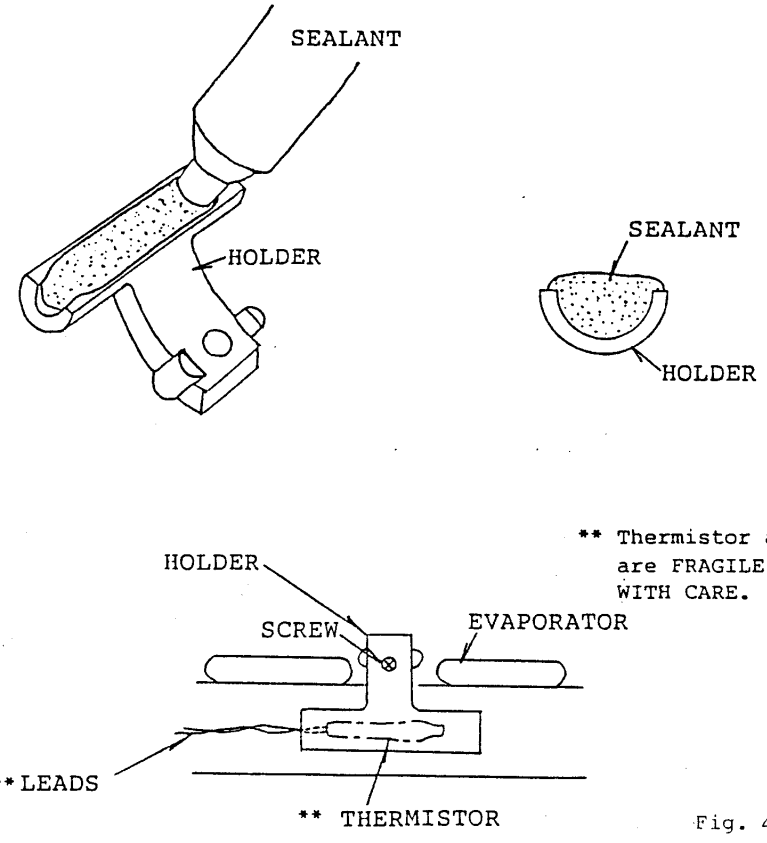


Fig. 43

2. REMOVAL OF PANELS

1) TOP PANEL ⑤

Remove a screw , on the rear of the top panel, and then just lift off.

2) FRONT PANEL - Upper and Lower ②⑥

Remove screw and then lift up slightly. Pull toward you.

3) LOUVER - Front and Side ⑦

Remove a LOUVER COVER and screw. Push and decline, and then pull toward you.

4) REAR MESH ⑳

Just remove screws.

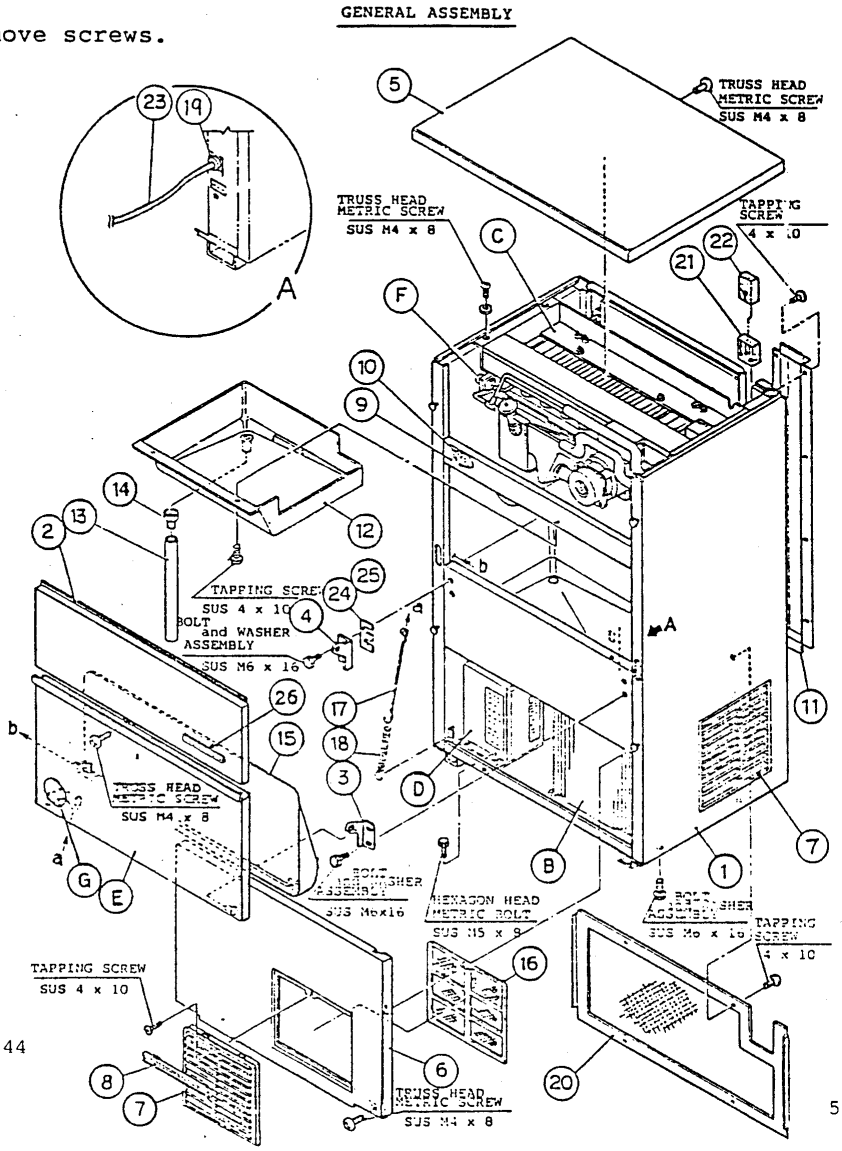


Fig. 44

GENERAL ASSEMBLY

Tab. 11

INDEX NO.	DESCRIPTION
B	Air-cooled Condenser - Refrigeration Unit Assembly
C	Icemaking Assembly and Cam Mechanism
D	Control Box Assembly
E	Bin Door Assembly
F	Water Supply Line Assembly
G	Penguin Label
1	Frame
2	Front Panel (Upper)
3	Hinge (R)
4	Hinge (L)
5	Top Panel
6	Front Panel (Lower)
7	Louver
8	Louver Cover
9	Front Frame
10	Insulation Foam
11	Pipe Cover
12	Drain Pan
13	Drain Pipe
14	Drain Tube
15	Slope
16	Air Filter
17	Hook
18	Extension Spring
19	Relief Bushing
20	Rear Mesh
21	Insulation Foam (A)
22	Insulation Foam (B)
23	Power Cord
24	Hinge Spacer (A)
25	Hinge Spacer (B)
26	Brand Badge

3. SERVICE FOR REFRIGERANT LINES

1) Refrigerant Discharge

A refrigerant Access VAlve is provided with the icemaker unit, on Self-contained Cuber*(Over IM-202J)and Modular Cuber Models.

Install a proper fitting on the HIGH-SIDE line, if necessary, to check for Guage Pressure.

NOTE; *On Self-contained Cuber Model up to IM-122J, NO REFRIGERANT ACCESS VALVE is provided with the unit. Install a proper Access Valve on the LOW-SIDE line (ex. Compressor Service Pipe).

2) Evacuating and Recharging

1. Attach Charging Hoses, Service Manifold and Vacuum Pump to the system.
2. Turn on the Vacuum Pump.
3. Allow vacuum pump to pull down to a 760mmHg vacuum. Evacuating period depends on Pump Capacity.
4. Close a Low-side valve on the Service Manifold.
5. Disconnect the vacuum pump, and attach a Refrigerant Service Can. Remember to loosen the connection, and blow the Air from the hose. See NAMEPLATE for refrigerant charge.
6. Open the Low-side Valve . DO NOT invert the service can. A LIQUID CHARGE will damage the Compressor.
7. Turn on the icemaker when charging speed gets SLOW. Turn off the icemaker when the Low-side Guage shows approximately 0kg/cm². DO NOT run the icemaker at vacuum pressures. Close the Low-side Valve when the Service Can gets empty.
8. Repeat STEP #4 through #7, if necessary, until a required amount of refrigerant enters the system.
9. Close the Rifrigerant Access Valve, and disconnect the Hoses, Service Manifold, etc.
10. Cap the Access Valve to prevent possible leak.

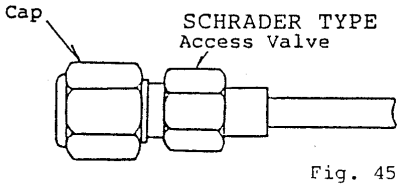
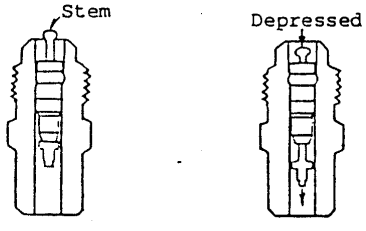


Fig. 45



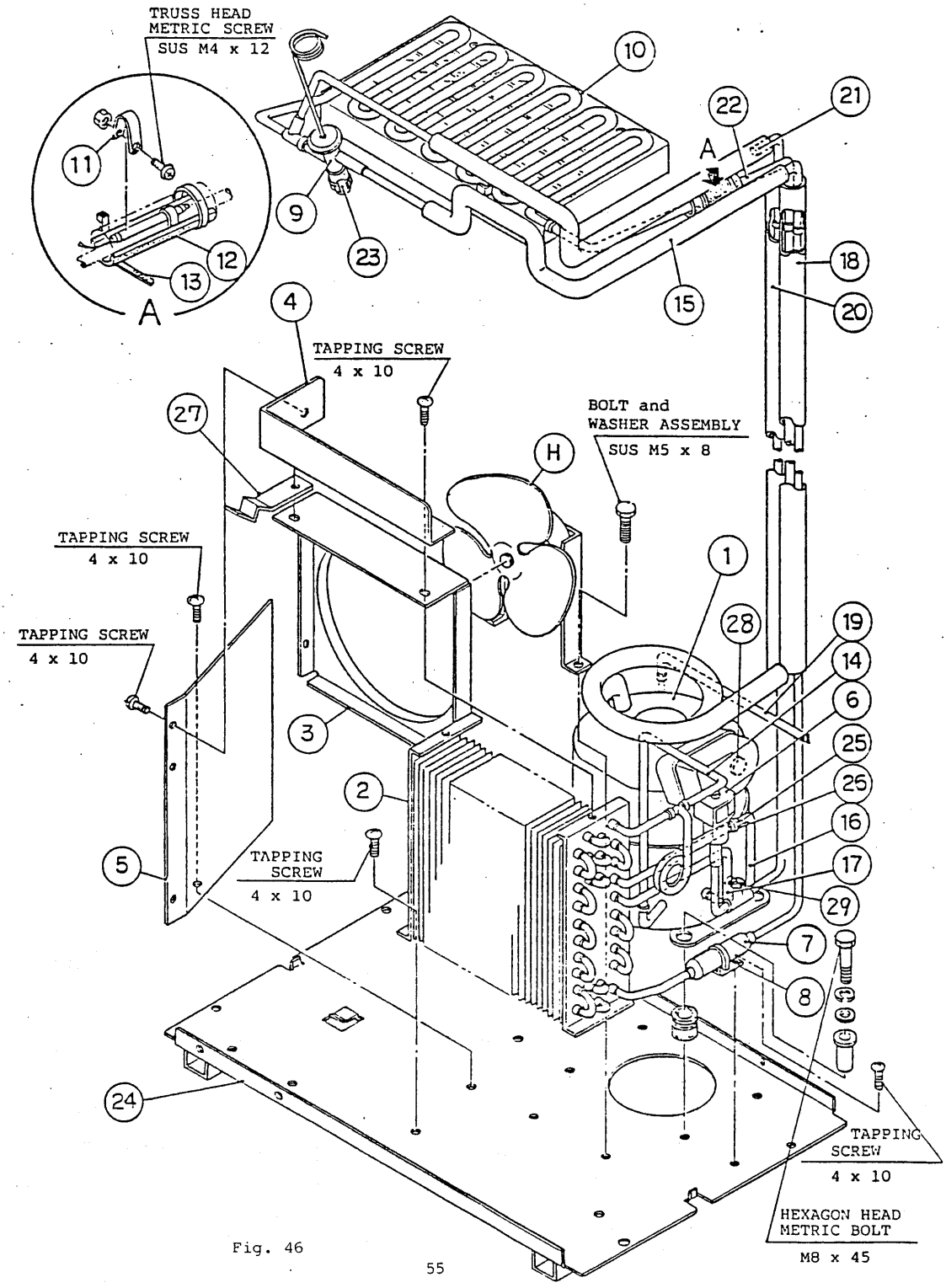

TRUSS HEAD
METRIC SCREW
SUS M4 x 12
A
TAPPING SCREW
4 x 10
BOLT and
WASHER ASSEMBLY
SUS M5 x 8
TAPPING SCREW
4 x 10
TAPPING SCREW
4 x 10
TAPPING
SCREW
4 x 10
TAPPING
SCREW
4 x 10
HEXAGON HEAD
METRIC BOLT
M8 x 45

Fig. 46

REFRIGERATION UNIT ASSEMBLY

Tab. 12

INDEX NO.	DESCRIPTION
H	Fan Motor Assembly
1	Compressor
2	Condenser
3	Shroud
4	Barrier (A)
5	Barrier (B)
6	Hot Gas Valve
7	Drier
8	Hot Gas Valve Bracket
9	Expansion Valve - IM-85J, 85WJ only
10	Evaporator
11	Fixed Band for Bulb - IM-85J, 85WJ only
12	Insulation
13	Clamp - Nylon Tie
14	Discharge Pipe (A)
15	Discharge Pipe (C)
16	Oil Cooler Pipe (A) - for compressor
17	Oil Cooler Pipe (B) - for compressor
18	Heat Exchange Pipe
19	Service Pipe (Sealed)
20	Hot Gas Pipe (A)
21	Hot Gas Pipe (B)
22	Insulation
23	Label - Factory Adjusted
24	Chassis
25	Insulation
26	Clamp
27	Air Filter Bracket
28	Overload
29	Fusible Plug

3. REMOVAL AND REPLACEMENT OF COMPRESSOR

1)Unplug the icemaker or disconnect the power source.
2)Remove the Louver (Right Side) and the Rear Mesh.
3)Blow refrigerant from the system.
4)Remove TERMINAL COVER on the compressor, and disconnect Solderless Terminals.
5)Remove the DISCHARGE and SUCTION pipes using a Brazing equipment.
6)Remove the HOLD-DOWN BOLTS, WASHERS and RUBBER GRUMMETS.
7)Slide the compressor and remove.

-Unpack a New Compressor package. Install a new compressor.

8)Attach the RUBBER GRUMMETS of the prior compressor.
9)Sandpaper the SUCTION and DISCHARGE pipes.
10)Place the compressor in position, and secure it using the BOLTS and WASHERS.
11)Remove PLUGS from the SUCTION and DISCHARGE pipes.
12)Braze or solder the ACCESS, SUCTION and DISCHARGE lines (DO NOT change this order), with NYTROGEN GAS flowing at the pressure 0.2 - 0.3 kg/cm^2.
13)Check for leaks using NYTROGEN GAS (10kg/cm^2) and soap bubble.
14)Evacuate the system and charge refrigerant.
See NAMEPLATE for required refrigerant charge.
15)Connect the Solderless Terminals and place the TERMINAL COVER in position.
16)Place PANELS in position.
17)Plug in or connect the power source.

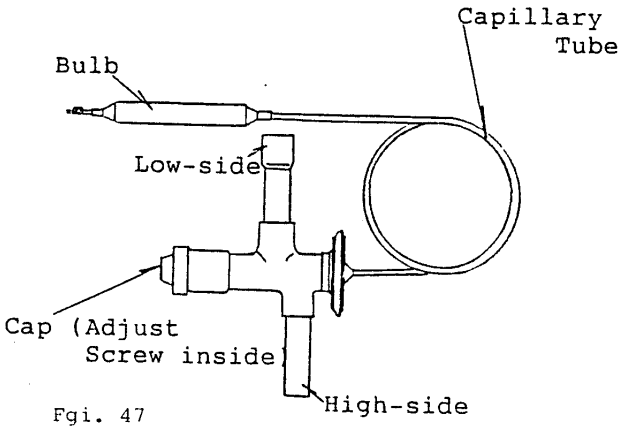
4. REMOVAL AND REPLACEMENT OF DRIER

1) Unplug the icemaker or disconnect the power source.
2) Remove the Louver (Right Side).
3) Blow refrigerant from the system.
4) Remove the DRIER HOLDER, if any, and pull the DRIER toward you for easy service.
5) Remove the DRIER using a Brazing equipment.
6) Braze or solder a new Drier, with the ARROW on the drier, in the DIRECTION of the REFRIGERANT FLOW.
   Use NYTROGEN GAS at the pressure of 0.2 - 0.3kg/cm² when brazing tubings.
7) Check for leaks using NYTROGEN GAS (10kg/cm²) and soap bubble.
8) Evacuate the system and charge refrigerant.
   See NAMAPLATE for required refrigerant charge.
9) Place louver in position.
10) Plug in or connect the power source.

5. REMOVAL AND REPLACEMENT OF EXPANSION VALVE

1) Unplug the icemaker or disconnect the power source.
2) Remove the Top Panel and Front Panel (Upper).
3) Blow refrigerant from the system.
4) Remove the Expansion Valve Sensor (BULB).
5) Disconnect the Solder-connections of the Valve, using a Brazing equepment.
6) Braze or solder a new expansion valve, with NYTROGEN GAS flowing at the pressure of 0.2 - 0.3kg/cm².
7) Check for leaks using NYTROGEN GAS (10kg/cm²) and soap bubble.
8) Evacuate the system and charge refrigerant. See NAMEPLATE for required refrigerant charge.
9) Attach the Bulb to the suction line in position. Be sure to secure it using a wire, and tape insulation.
10) Place the panels in position.
11) Plug in or connect the power source.

IMPORTANT; Sometimes moisture in the Refrigerant Circuit exceeds Drier capacity and freeze up at the Expansion Valve. Drier should be replaced at the same time.



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6. REMOVAL AND REPLACEMENT OF EVAPORATOR

1) Remove the WATER PAN ASSEMBLY, refer to "REMOVAL AND REPLACEMENT OF WATER PAN ASSEMBLY".
2) Remove the solder connection on the Evaporator using a Brazing equipment.
3) Remove 4 (four) NUTS holding the Evaporator.
4) Install a new evaporator, and secure it using Bolts, Collars (Spacer) and Nuts.
5) Braze pipes , witht NYTROGEN GAS flowing at the pressure 0.2 - 0.3kg/cm^2.
6) Check for leaks using NYTROGEN GAS (10kg/cm^2) and soap bubble.
7) Evacuate the system and charge refrigerant. See NAMEPLATE for required refrigerant charge.
8) Place the panels in position.
9) Plug in or connect the power source.

7. REMOVAL AND REPLACEMENT OF HOT GAS VALVE

1) Unplug the icemaker or disconnect the power source.
2) Remove the Louver (Right Side).
3) Disconnect the HOT GAS VALVE leads.
4) Remove screw and SOLENOID.
5) Remove the solder connection using a Brazing equipment.
6) Install a new valve. Always PROTECT the valve body using a DAMP CLOTH to prevent damage to valve against overheat. DO NOT braze with the valve body exceeding 120°C. Use NYTROGEN GAS at the pressure of 0.2 - 0.3kg/cm² when brazing the valve.
7) Check for leaks using NYTROGEN GAS (10kg/cm²) and soap bubble.
8) Evacuate the system and charge refrigerant. See NAMEPLATE for required refrigerant charge.
9) Attach a Solenoid to the valve body, and secure it with screw.
10) Connect the Leads.
11) Place the louver in position.
12) Plug in or connect the power source.

4. SERVICE FOR WATER SYSTEM

1. REMOVAL AND REPLACEMENT OF WATER PAN ASSEMBLY

1) Remove the TOP PANEL and FRONT PANEL (UPPER).
2) Remove the FRONT PANEL (LOWER), and push the RESET SWITCH or move the CONTROL SWITCH, on the Control Box, to open the WATER PAN.
3) Unplug the icemaker or disconnect the power source.
4) Remove the Pump Motor leads, disconnecting wire connectors in the Wiring Channel.
5) Remove 2 (two) EXTENSION SPRINGS from the Cam Arms.
6) Remove the WATER PLATE BRACKET and WATER PAN ASSEMBLY.
7) Remove 2 (two) Hex Bolt from the water tank.
8) Remove scrws and Water Plate Bracket.
9) Remove the Pump SUCTION and DISCHARGE tubings.
10) Remove the PUMP MOTOR BRACKET from the Water Plate.
11) Install a new Water Plate or Water Tank in reverse order.
12) Place the panels in position.
13) plug in or connect the power source.

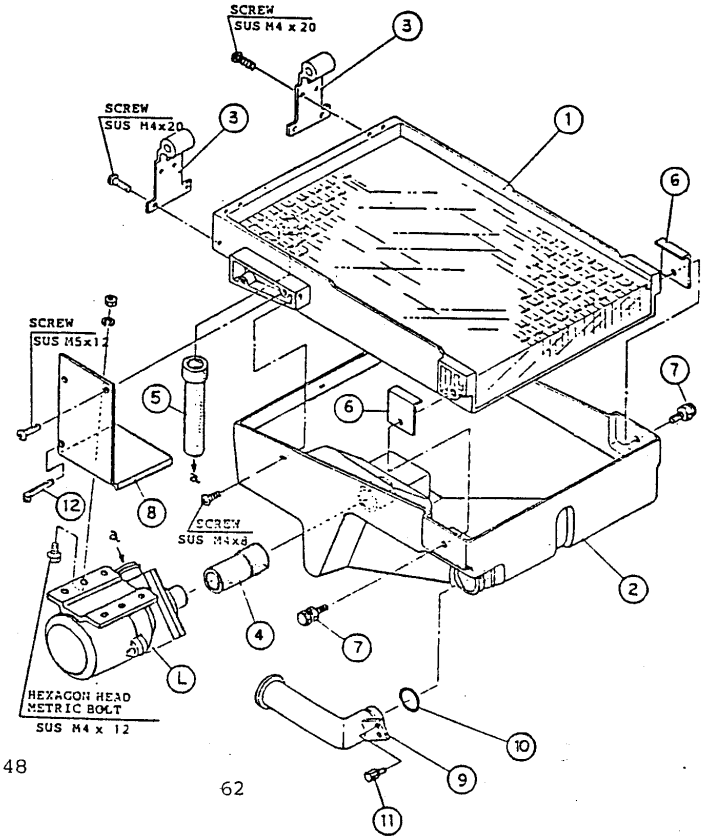

Fig. 48

WATER PAN ASSEMBLY

Tab. 13

INDEX NO.	DESCRIPTION
L	Water Pump Assembly
1	Water Plate
2	Water Tank
3	Water Pan Hanger (B) - Bracket
4	Pump Tubing (Suction)
5	Pump Tubing (Discharge)
6	Friction Plate
7	Hex Bolt - for water tank
8	Pump Motor Bracket
9	Overflow Pipe
10	O-ring
11	Hex Bolt - for overflow pipe
12	Clamp - nylon tie

ICE MAKING ASSEMBLY AND CAM MECHANISM

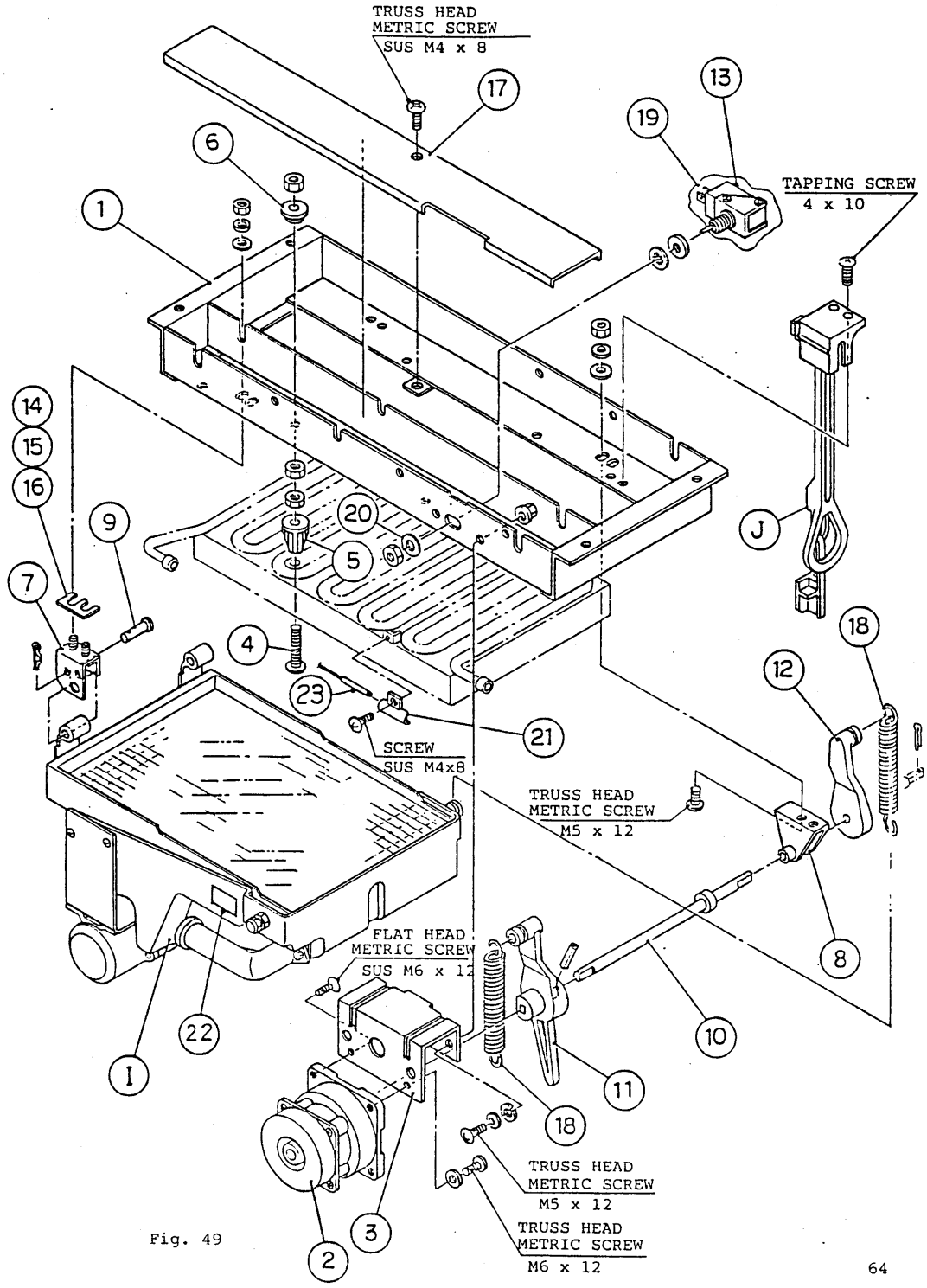

Fig. 49

ICEMAKING ASSEMBLY AND CAM MECHANISM

Tab. 14

INDEX NO.	DESCRIPTION
I	Water Pan Assembly
J	Bin Control Switch Assembly
1	Base
2	Actuator Motor
3	Actuator Motor Bracket
4	Bolt
5	Collar - Spacer
6	Washer
7	Bearing (A)
8	Cam Shaft Bearing (F)
9	Shaft (B)
10	Cam Shaft
11	Cam Arm (A)
12	Cam Arm (B)
13	Actuator Toggle Switch
14	Washer Plate (A)
15	Washer Plate (B)
16	Washer Plate (C)
17	Base Cover
18	Extension Spring
19	Switch Cover
20	Switch Washer
21	Thermistor Holder
22	Caution Label - for overflow pipe
23	Thermistor (Cube Control)

2. REMOVAL AND REPLACEMENT OF ACTUATOR MOTOR

1) Remove the Top Panel and Front Panel (Upper).
2) Remove the Front Panel (Lower), and push the Reset Switch or move the Control Switch , on the control box, to open the Water Pan.
3) Unplug the icemaker or disconnect the power source.
4) Remove the Extension Spring (Actuator Motor side) from the cam arm.
5) Disconnect the Actuator Motor leads in the Wiring Channel.
6) Remove the Actuator Motor Bracket.
7) Remove SPRING PIN securing the shaft to cam arm.
8) Remove the actuator motor.
9) Install a new actuator motor in reverse order.
10) Check and adjust as the cam arm moves the ACTUATOR TOGGLE SWITCH to the "FREEZE" and "DEFROST" positions normally.
11) Place the panels in position.
12) Plug in or connect the power source.