

MODULAR ICE MAKER

# **SERVICE MANUAL**

FM-150AKE-HC-SB FM-150AKE-HCN-SB FM-300AKE-HC FM-300AKE-HCN FM-480AKE-HCN

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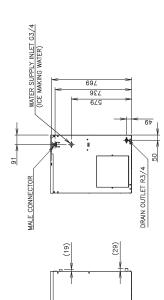
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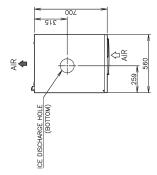
### I. SPECIFICATIONS

### 1. DIMENSIONS/SPECIFICATIONS

### [a] FM-150AKE-HC-SB

MODEL POWER SUPPLY Capacity. CaBNA (2.9A) POWER SUPPLY Capacity. Cabox (2.0A) ELECTRIC CABNA (2.0A) ELECTRIC CABNA (2.0A) CABNA (2.0A) CABNA (2.0A) CABNA (2.0A) CABNA (2.0A) Approx.128/ag (Ambient Temp. 10 C. Water Temp. 10 C) SHAPE OF ICE Floke wax. STORAGE MAX. STORAGE CABNATION Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) SHAPE OF ICE Floke wax. STORAGE CABNATION Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON Approx.015/af (Ambient Temp. 27 C. Water Temp. 21 C) BREACHTON BOUNTOL Acturing Incet Commediated Switch (Floxe Ice) WARESSOR Herrinetic COMPROSE BIN CONINTOL Acturior ond Reed Switch (Time delay controlled) BENCHMANN FRETRICERANIT R290/1109 BREACHTON CONNECCION MICRO Acturior and Water Valve BRETRICERANIT REPROSE CONDITION WEIGHT NOTE: Grant Witch (Manual - reset) PROTECTION WICH Temp. 5 - 40 C. Water Supply Temp. 5 - 35 C CONDITIONS WEIGHT NOTE: Grant Compressor Internations and design without promote.  Weight in instituctions on location, water supply/drain connections and electrical connections a	ITEM	LAKE
POWER SUPPLY 1 Photos 2202—2404 Solft AMPERAGE 2.3A Starting: 9.6A  AMPERAGE 2.3A Starting: 9.6A  ELECTRICA 405W (Power Factor: 77%)  CENSIGNATION 405W (Power Factor: 77%)  CE PRODUCTION 405W (Ambient Temp. 10°C) Water Temp. 10°C) PER 24h  Approx.1584 (Ambient Temp. 27°C, Water Temp. 10°C) PER 24h  Approx.1584 (Ambient Temp. 27°C, Water Temp. 21°C) Water Consultance 100 MSC 2013 (Ambient Temp. 21°C) Water Temp. 21°C) PER 24h  Approx.015m (Ambient Temp. 21°C, Water Temp. 21°C) PER 24h  Approx.015m (Ambient Temp. 22°C, Water Temp. 21°C) PER 24h  Approx.015m (Ambient Temp. 22°C, Water Temp. 21°C) PER 24h  Approx.015m (Ambient Temp. 32°C, Water Temp. 21°C) PER 24h  MSC 300 (W) × 700 (D) × 780 mm (H)  HEAT RELECTION 800W (Ambient Temp. 32°C, Water Temp. 21°C) CABINET  COMMRESSOR Hermetic  CONDENSER Fin and Tube Type, Air—cooled  EXPROPATOR Thub coiled around Cylinder (Solder Plated)  REFRIGERANT RESOR Hermetic  CONDENSER Fin and Tube Type, Air—cooled  EXPROPATOR Thub coiled around Cylinder (Solder Plated)  REFRIGERANT RESOR Fin and Tube Type, Air—cooled  EXPROPATOR Tube coiled around Cylinder (Solder Plated)  REFRIGERANT RESOR Fin and Tube Type, Air—cooled  EXPROPATOR Tube coiled around Cylinder (Solder Plated)  REFRIGERANT RESOR Fin and Tube Type, Air—cooled  EXERGENCA RESOR Fin and Tube Type, Air—cooled  EXERGENCA RESOR Fin Compressor Infernal Thermostat (Auto—reset), PROTICETION  MITERLOCK Shutdown by Microprocessor (Manual—reset), PRACKAGE  MOUNTING Bracker, Earth Wire  PACKAGE  AND MOUNT SON SOLD SON SOLD SOLD SOLD SOLD SOLD SOLD SOLD SOLD	MODEL	FM-150AKE-HC-SB
AMPERAGE  2.3.4 Starting: 9.6A  CELECTRICA  405W (Power Factor: 77%)  CENSUMPTION  Approx.1584 (Ambient Temp. 10° C. Water Temp. 10° C)  PER 24h  Approx.1584 (Ambient Temp. 21° C. Water Temp. 10° C)  STAPE OF ICE  CACACITY  WITS CONSUMPTION  Approx.01584 (Ambient Temp. 21° C. Water Temp. 10° C)  STAPE OF ICE  CACACITY  Approx.01584 (Ambient Temp. 21° C. Water Temp. 10° C)  WITS CONSUMPTION  Approx.01584 (Ambient Temp. 21° C. Water Temp. 10° C)  PER 24h  Approx.01584 (Ambient Temp. 21° C. Water Temp. 11° C)  Approx.01584 (Ambient Temp. 21° C. Water Temp. 11° C)  OUISIE UMBERSION  SECOND (W) × 70° C) (D) × 78° CMOTE TEMP. 21° C)  CABINET  Stainless Steel, Galvanized Steel (Rear)  ICE WARN SYSTBM  Thin ice forming inside Cylinder (Floke Ice)  WITS EMPROSATION  CONDENSER  Fin and Tube Tube Colled around Cylinder (Solder Plated)  REFRICERAN  REPRICERAN  CONNERSON  FER In and Tube Type, Air—cooled  ENAPORATION  CONDENSER  Fin and Tube Tube Water Valve  ELEGRICAL RESULT RESULT OUTLEST  FOOLINGUL  CONDENSER  Fin and Tube Tube Water Valve  ELEGRICAL OR SWITCH (Manual—reset)  METERICAL OR  MISTORIAN MICRO  CONDENSER  Fin and Tube Water Valve  ELEGRICAL OR  RESULT SWITCH AND WATER TO SWITCH (Manual—reset)  METERICAL OR  MICRO SWITCH (MANUAL—reset)  METERICAL OR  MICRO SWITCH (MANUAL—reset)  METERICAL OR  WELCHT  Net: E. SSIG (Gross: 70kg)  MARCHANISM  Micro Switch (Manual—reset)  METERICAL OR  Weter supply Pressure: 0.50-0.8Met 0.50-0.50-0.50-0.50-0.50-0.50-0.50-0.50	POWER SUPPLY	1 Phase 220—240V 50Hz Capacity: 0.69kVA (2.9A)
CELECTRECTED 405W (Power Factor: 77%)  CERPRODUCTION Approx.150kg (Ambient Temp. 10° C) PER 24h  Approx.105kg (Ambient Temp. 10° C, Water Temp. 10° C)  SHAPE OF ICE  Floke  APPROACTIV  WITE CONSUMTION  Approx.0.15mf (Ambient Temp. 27° C, Water Temp. 21° C)  SHAPE OF ICE  CAPACITY  Approx.0.15mf (Ambient Temp. 27° C, Water Temp. 21° C)  PER 24h  Approx.0.15mf (Ambient Temp. 27° C, Water Temp. 10° C)  PER 24h  Approx.0.15mf (Ambient Temp. 27° C, Water Temp. 10° C)  PER 24h  Approx.0.15mf (Ambient Temp. 27° C, Water Temp. 10° C)  PER 24h  HEAT RELECTION  BOOW (Ambient Temp. 32° C, Water Temp. 10° C)  CABINET  COMPRESSOR  Hermetic  CONDENSER  Fin and Tube Tube Type, Air—cooled  EXPRORATION  CONNER Fin and Tube Type, Air—cooled  EXPRORATION  CONDENSER  Fin and Tube Dilder Conder (Solder Plated)  REFRIGERANT  REPRICETION  CONDENSER  Fin and Tube Type, Air—cooled  EXPRORATION  CONDENSER  Fin and Tube Dilder Conder (Solder Plated)  REFRIGERANT  CONDENSER  Fin and Tube Tube Tenth (Time delay controlled)  CONDENSER  Fin and Tube Solder And Water Valve  EXERGENCION  WERRANG WATER  FOOT SWITCH AND	AMPERAGE	2.3A Starting: 9.6A
CONDENSER FIND OUTSEL (Morbient Temp, 10° C, Water Temp, 10° C) PER 24h.  Approx.15849 (Ambient Temp, 21° C, Water Temp, 10° C) STAPE OF ICE  CARACITY  MAX. STORAGE  Not Applicable  CABACITY  Approx.01547 (Ambient Temp, 21° C, Water Temp, 11° C)  WITER CONSUMPTION  Approx.01547 (Ambient Temp, 21° C, Water Temp, 11° C)  PER 24h  Approx.01547 (Ambient Temp, 21° C, Water Temp, 11° C)  CABINET  Stolinless Steel, Galvania et pp. 11° C)  CABINET  Stolinless Steel, Galvania et pp. 21° C)  CABINET  Stolinless Steel, Galvania et p. 21° C)  CABINET  Stolinless Steel, Galvania et p. 21° C)  CABINET  CONNERSSOR Hermetic  CONDENSER Fin and Tube Type, Air—cooled  REFRIGERAM  REPRICEROM  CONNERS Fin and Tube Type, Air—cooled  RERRICEROM  CONNERS Fin and Tube Type, Air—cooled  ELEGRICAL REALT R290/1109  BIN CONTROL  RETRICEROM  CONNERS Fin and Tube Type, Air—cooled  ELEGRICAL RAND AND AND AND AND AND AND AND AND AND	ELECTRIC	(Power Factor: 7
SHAPE OF ICE  MAX. STORAGE  MAX. STORAGE  Not Applicable  CAPACITY  WITE CONSUMPTON  Approx.0.13mf (Ambient Temp. 10°C, Water Temp. 10°C)  PER 24h  MAY. STORAGE  Stainless Steel, Colvonized Steel (Bear)  OUTSIE DIMENSINS  Stoliness Steel, Calvonized Steel (Rear)  DRAIN STSTEM  OUTSIE DIMENSINS  STORAGE  MITE STORAGE  MITE STORAGE  MITE STORAGE  MITE STORAGE  MITE STORAGE  MITE STORAGE  CONDENSER  Fin and Tube Type, Air—cooled  EXPAPORATOR  Thus colled around Cylinder (Solder Plated)  REFRIGERAIN  REPRISERAIN  RESOUND INCOMINED  REFRIGERAIN  REPRISERAIN  CONDENSER  Fin and Tube Type, Air—cooled  EXPAPORATOR  The colled around Cylinder (Solder Plated)  REFRIGERAIN  REPRISERAIN  REPRISERAIN  REPRISERAIN  MICROMEN  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Solder Order  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Solder  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Solder  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Solder  CONDENSER  Fin and Tube Type, Air—cooled  CONDENSER  Fin and Tube Tooled  CONDENSER  MICROMINGN  MICROS Switch (Mandon—reset)  MCCHANISM  MICROS SWITCH  MADON TO SWITCH  MADO	ICE PRODUCTION PER 24h	10° C, Water Temp. 10° 21° C, Water Temp. 15° 32° C, Water Temp. 21°
MAX. STORAGE  MAY Applicable  MAY Applicable  MAY Approx. 15m7 (Ambient Temp. 10°C, Water Temp. 10°C)  MER CONSUMPTION  Approx.0.15m7 (Ambient Temp. 20°C, Water Temp. 10°C)  MER CABINET  CABINET  CABINET  CABINET  CABINET  CABINET  COMPRESSOR  First and Tube Type, Air—cooled  EVAPORATOR  ENAMON SYSTEM  OUTLET: R3.74  COMPRESSOR  First and Tube Type, Air—cooled  EVAPORATOR  ENAMON MITER STORATOR  COMPRESSOR  First and Tube Type, Air—cooled  ENAMON SYSTEM  CONDENSER  First and Tube Type, Air—cooled  EVAPORATOR  ENAMON MITER STORATOR  COMPRESSOR  First and Tube Type, Air—cooled  EVAPORATOR  ENAMON MITER SAME And Author-reset)  METHOCK  ENAMON MITER SAME And Author-reset)  METHOGEN  MICH COMPRESSOR  MICH Switch and Water Valve  ENEMERAN MITER STORATOR  MICH Switch (Manual—reset)  MECHANISM  MICH Switch (Manual—reset)  METHOR MANUAL AND MICH SWITCH  METHOR MANUAL MANUAL AND MICH SWITCH  METHOR MANUAL MANUAL MANUAL MICH SWITCH  METHOR MANUAL MANUAL MANUAL MICH SWITCH  METHOR MANUAL MANUAL MANUAL MANUAL MICH SWITCH  METHOR MANUAL MA	SHAPE OF ICE	
WIER CONSUMPTION Approx.0.11 Int/Ambient Temp. 10: C) PER 24h Approx.0.11nt/Ambient Temp. 27: C, Water Temp. 10: C) UNIDE UBLESCINON BOOW (Ambient Temp. 27: C, Water Temp. 21: C) UNIDE UBLESCINON BOOW (Ambient Temp. 27: C, Water Temp. 21: C) ABOUND SOSIBL Thin ice forming inside Cylinder (Flake Ice) WIER SIGNED COMPRESSOR Hermetic CONDENSER Fin and Tube Type, Air—cooled EVAPORATOR Inbe coiled around Cylinder (Solder Plated) REFRIGERANT R290/1109 BIN CONTROL REFRIGERANT R290/1109 CE WAKING WATER FOOT SWITCH AND WATER CAIR (Manual—reset) METRICORN CONTROL REFRIGERANT R290/1109 BIN CONTROL REFRIGERANT R290/1109 REFRIGERANT RANTOR TO SWITCH (Manual—reset) REFRIGERANT RANTOR SWITCH (Manual—reset) REFRICTION REFRIED RANTOR SWITCH (Manual—reset) REFRIED REPRODERY IN CONTROL SWITCH (Manual—reset) REFRIED REPRODERY IN SWITCH (MANUAL—REFRIED RANTOR (MANUAL—REFRIED RANTOR (MANUAL—REF	MAX. STORAGE CAPACITY	Not Applicable
OUTSDE DMENSIONS 560 (W) x 700 (D) x 780mm (H) HAR REJECTION 800W (Ambient temp_27 C, Water temp_21 C) CABINET Stainless Steel, Galvanized Steel (Rear) DRAMN SYSTEM Stainless Steel, Galvanized Steel (Rear) DRAMN SYSTEM Outlet: R3/4 EVAPORATOR Tube coiled around Cylinder (Solder Plated) RERRIGERAM R290/1109 BIN CONTROL Actuator and Reed Switch (Time delay controlled) DRESCHOON Country Count Breaker, Earth Wire ERRIGERAM (ROUT Croutt Breaker, Earth Wire PROTECTION MICHOLOK Shutdown by Microprocessor (Manual—reset) WEIGHT Net: 63kg (Gross: 70kg) WEIGHT N	WATER CONSUMPTION PER 24h	
HEATRELECTION 800W (Ambient temp_32" C. Walter temp_21" C. CABINET.  Stoinless Steel. Calvanized Steel (Rear)  CERNENC STEEL Thin ice forming inside Cylinder (Flake Ice)  WIRE SIPRI'S STEEL Thin ice forming inside Cylinder (Flake Ice)  BAND SYSTEM Outlet: R3/4  COMDENSES Fin and Tube Type, Air—cooled  EVAPORATOR The coiled around Cylinder (Solder Plated)  REFRICERANT R280/1109  BIN CONTROL Actuator and Reed Switch (Time delay controlled)  CE WARNEW WIRE Float Switch and Water Valve  ERSTREAM R280/1109  ERSTREAM R280/1109  CE WARNEW WIRE Float Switch Auto—reset)  PROTECTION  PRESIDENCY CONTROL Solution of Manual—reset)  PROTECTION  WICH SIND SWITCH (Manual—reset)  WEIGHT  Net: 63/8 (Gross: 70/kg)  WEIGHT  Net: 63/8 (Gross: 70/kg)  PACKAGE  Carton 665 (W) x 820 (D) x 950mm (H)  ACCESSORIES  Mounting Bracket, Installation Kit operexame  We reserve the pitt to make properly in accordance with the instructions and electrical connections and electrical connections and electrical connections where instruction and installation was unanuals status of a voter temperatures.	OUTSIDE DIMENSIONS	
COMDENSINE Thin ice forming inside Cylinder (Floke Leg) MRIB 3IPRV SISTEM Thin ice forming inside Cylinder (Floke Leg) DRAND SYSTEM Outlet: R3/4 COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR House Switch (Time delay controlled) REFRIGERANT R290/1109 REFRIGERANT R200/1109 REFRIGERANT R200/1109 REFRIGERANT R200/1109 REFRIGERANT R200/100 SWITCH (Manual—reset) REFRIGERANT R200/100 SWITCH R200	HEAT REJECTION	800W (Ambient temp.32' C,Water temp.21' C)
WIRE SIPPLY SISTEM  OUTIET: R3/4  DRAIN SYSTEM  OUTIET: R3/4  COMDENSESOR  Hermetic  CONDENSESOR  ENAPORATIOR  ENAPORATIOR  The coiled around Cylinder (Solder Plotted)  REFRIGERANT  REPORATIOR  REFRIGERANT  REPORATIOR  RETORICTION  CONTROL  Actualor and Naced Switch (Time delay controlled)  CONTROL  CONTROL  CONTROL  RETORICTION  RETORICTION  RETORICTION  MICHAINS  MICHAINS  MICHAINS  MICHAINS  MICHAINS  MICHAINS  MICHAINS  MICHAIN	ICF MAKING SYSTEM	Thin ice forming inside Cylinder (Elake Ice)
DRAIN SYSTEM Outlett. R3/4  COMPRESSOR Hermetic  CONDERSE Fin and Tube Type, Air—cooled  CONDENSER Fin and Tube Type, Air—cooled  EKAPORATOR Tube coiled around Cylinder (Solder Plated)  REFRIGERANT R290/110g  BIN CONTROL Actuator and Reed Switch (Time delay controlled)  CONTROL Actuator and Reed Switch (Time delay controlled)  CONTROL Actuator and Reed Switch (Time delay controlled)  CONTROL REPROFECTION  REPROFECTION  REPROFECTION  REPROFECTION  MICHO Switch (Manual—reset)  MICHAIL  Net: 63kg (Gross: 70kg)  PROFECTION  WEIGHT  Net: 63kg (Gross: 70kg)  PROFECTION  Were Supply Pressures to Co- 0 Bapy Tame; 5-35° CONDITIONS  Voltage Range: Rated Voltage ±6%  Were reserve hight to make denges in speciations and delay misot prior notice.  In Install the ice maker properly in accordance with the instructions and electrical connections stated in the instruction and installication manuals provided.  2. The ice production depends on the ambient and worder temperatures.  Refer to the instruction and	WATER SUPPLY SYSTEM	
COMPRESSOR Hermetic  CONDENSER Fin and Tube Type, Air—cooled  EVAPOPATOR Tube coiled around Cylinder (Solder Plated)  REFRIGERANT R2290/110g  BIN CONTROL Actuator and Reed Switch (Time delay controlled)  CE MARKIE Float Switch and Water Valve  ELECTRICAL GROUT Circuit Breaker, Earth Wire  PROTECTION  PRESENT Switch (Auto—reset)  MICHOCK Shutdown by Microprocessor (Manual—reset)  NETRICOCK Shutdown by Microprocessor (Manual—reset)  NETRICOCK Shutdown by Microprocessor (Manual—reset)  PROTECTION  Net: 63kg (Gross: 70kg)  PROCKAGE  Carton 665 (W) x 820 (D) x 950mm (H)  ACCESSORIES Mounting Bracket, Installation Kit  OPERATING  Weter Supply Pressure: 0.05-0.8MP of 0.5-68par)  Versener height to make demage: Rated voltage ±6%  Weter Supply Pressure: 0.05-0.8MP of 0.0000000000000000000000000000000000	DRAIN SYSTEM	Outlet: R3/4
CONDENSER Fin and Tube Type, Air—cooled ENAPATOR Tube coiled around Cylinder (Solder Plated) REFRICERAIT R290/1109 BIN CONTROL Actuator and Reed Switch (Time delay controlled) CONTROL Actuator and Reed Switch (Time delay controlled) CONTROL Actuator and Reed Switch (Time delay controlled) CONTROL CALLOTOR Switch and Water Valve ELEGREMAN GROUP FORTICETION FORTICET	COMPRESSOR	Hermetic
EVAPORATOR Tube coiled around Cylinder (Solder Plated)  REFRIGERANI R290/1109  BIN CONDITION  REFRIGERANI R290/1109  CE WARNIG MATER  FOOT SWITCH and Water Valve  ERRIGENU GROUI  CITCUIT Breader, Earth Wire  RERRIGENU GROUI  CITCUIT Breader, Earth Wire  RERRIGENU GROUI  CITCUIT Breader, Earth Wire  RERRIGENU GROUI  MICTO Switch (Manual—reset)  MCFHANISM  MICTO Switch (Manual—reset)  MECHANISM  MOUNTING Bracket, Installation Kit  OPERATING  Water Supply Pressure .050-0.8Mps (0.5-8bor)  Voltage Range Range Voltage Range Voltage Range Nation Frontier).  In Install the ice maker properly in accordance with the instructions and electrical comections and electrical comections stated in the instruction depends in spatial manuals and water temperatures.  Refer to the instruction and installation manuals and water temperatures.	CONDENSER	Type,
REFRIGERAMI R250//110g BIN COUNTROL Actuator and Reed Switch (Time delay controlled) CE WARRING WITE Float Switch and Water Valve BEGINGRAU COMPROL COMPROL CONTROL BERNGERANG (MANUEL TEATH Wire PREMEMBRAICH (MANUEL TEATH WIRE REPREMEMBRAICH (MANUEL TEACH) PRECHANISM MICRO Switch (MANUEL TEACH) MITTERLOCK Shutdown by Microprocessor (Manual Teach) MEGHT NOTE: 6.3kg (Gross: 70kg) MEGHT NOTE: 6.3kg (Gross: 70kg) MEGHT MAINTERLOCK Shutdown by Microprocessor (Manual Teach) MEGHT NOTE: 6.3kg (Gross: 70kg) MEGHT MAINTERLOCK Shutdown by Microprocessor (Manual Teach) MEGHT NOTE: 6.3kg (Gross: 70kg) MEGHT MAINTERLOCK Shutdown by Microprocessor (Manual Teach) MEGHT NOTE: 6.3kg (Gross: 70kg) MEGHT NOTE: 6.3kg (Gross: 70kg) MAINTERLOCK Shopp Pressure: 0.05-0.0MP (0.3-80ar) Notices Rough Repects: 6.4kg water Supply Famp: 5-35 c CONDITIONS Voltage Range: Rated Voltage ±6% Water reare height to make desprict connections and destricted connections and destricted connections stated in the instruction and installation manuals stated in the instruction and installation manuals stated in the instruction and electrical connections an	EVAPORATOR	oiled around Cylinder (Solder
BIN CONTROL Actuator and Reed Switch (Time delay controlled) CONTROL CONTROL CONTROL COUNTROL ELECTROLA CIRCUIT Breaker, Earth Wire ELECTROLA COMPRESSOR INTERNATION ETRIGEDMI COMPRESSOR INTERNATION METCOLINIA METCOLINIA METCOLINIA MICLO SWITCH (Manual-reset) MECHANISM MICLO SWITCH (Manual-reset) MECHANISM MICLO SWITCH (Manual-reset) MECHANISM MICLO SWITCH (Manual-reset) MECHAT CORTON 655 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATIN ONDITIONS Moter Supply Pressure: 0.05-0.8MPa (0.5-8Pa) Were reserve in final to make reproperly in accordance with the instruction and electrical connections and electrical connections and electrical connections stated in the instruction and installation manuals provided.  Weight to the instruction depends on the ambient and water temperatures.	REFRIGERANT	R290/110g
CEMARKIG WIRR Float Switch and Water Valve ELECTRICAL GROUT ELECTRICAL GROUT ERROGANICAL ERROGANICAL ERROGANICAL ERROGANICAL ERROGANICAL ERROGANICAL ERROGANICAL ERROCATION MICROS SWITCH (Manual-reset) NITERIOCK Shutdown by Microprocessor (Manual-reset) NITERIOCK Shutdown by Microprocessor (Manual-reset) NEIGHT Net: 63kg (Gross: 70kg) PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATING Water Supply Pressure: 0.05-0.8Mp/ fame; 5-35 r CONDITIONS Voltage Range: Rated Voltage ±6% Were reset we final to make dengine inspections and despitical connections stated in the instructions and electrical connections stated in the instruction and installation manuals provided, water temperatures.  Refer to the instruction depends on the ambient and water temperatures.	BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
RETRIGEMENT Circuit Breaker, Earth Wire PERCIECTION RETRIGEMENT COMPressor Internal Thermostat (Auto-reset), PROTECTION RETRIGEMENT COMPRESSOR INTERNAL (AUGO-reset), PROTECTION MINTERLOCK Shutdown by Microprocessor (Manual-reset) WEIGHT Carton 665 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATING Water Supply Pressure: 0.05-0.3MPa (0.5-0.20) COMMINIONS Voltage Range: Rated Voltage ±68 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATING Water Supply Pressure: 0.05-0.3MPa (0.5-0.20) COMMINIONS Voltage Range: Rated Voltage ±68 (D) x 950mm (H) the instructions and electrical connections and electrical connections stated in the instruction and installation manuals provided.  Refer to the instruction depends on the ambient and water temperatures.	ICE MAKING WATER CONTROL	Switch and
RETREAM CROUT Compressor Internal Thermostat (Auto-reset), PROTECTION Pressure Switch (Auto-reset) MECHANISM Micro Switch (Manual-reset) PROTECTION Micro Switch (Manual-reset) MICRELOCK Shutdown by Microprosessor (Manual-reset) WIEGHT Net: 63kg (Gross: ZOKg) PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATING Ambert Imp.: 6 - 40°, where shoppy Temp.: 5-35 CONDITIONS Notes Supply Pressure: 0.05-0.08MP (0.5-8bp) Notes Production depends on the ambient and water temperatures.	ELECTRICAL CIRCUIT PROTECTION	
Micro Switch (Manual-reset)  INTERLOCK Shutdown by Microprocessor (Manual-reset)  WEIGHT Net: 63kg (Gross: 70kg)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  PACKAGE Carton 665 (W) x 820 (D) x 950mm (H)  We reserve line fight to mackage properly in accordance with the instructions and electrical connections and electrical connections stated in the instruction and installation manuals stated in the instruction and electrical connections stated in the instruction and installation manuals stated in the instruction and installation manuals and water temperatures.	REFRIGERANT CIRCUIT PROTECTION	
INTERLOCK Shutdown by Microprocessor (Manual-reset) WEIGHT Net; ESIAG (Gross; 70kg) PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kit OPERATING Water Supply Pressure: 0.05–0.8Mpc (0.5–8bor) CONDITIONS Water Supply Pressure: 0.05–0.8Mpc (0.5–8bor) We reserve he might to make demonstrations and design without prontice. In install the ice marker properly in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instruction and installation manuals provided, water temperatures.  Refer to the instruction depends on the ambient and water temperatures.	MECHANISM PROTECTION	Micro Switch (Manual—reset)
WEIGHT Net: 63kg (Gross: 70kg) PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) OPERATING Ambient Temp. 5 - 40°C, Water Supply Temp. 5-35°C CONDITIONS Voltage Range in specificion and design what promote. We reserve the right to med denges in specificions and design what promote. In the instructions on location, water supply/drain connections and electrical connections stated in the instruction and installation manuals provided. The instruction and installation manuals stated in the instruction depends on the ambient and water temperatures.  Refer to the instruction depends on the ambient and water temperatures.	INTERLOCK	
PACKAGE Carton 665 (W) x 820 (D) x 950mm (H) ACCESSORIES Mounting Bracket, Installation Kitt OPERATING Marbiert Temp. 5 – 40°C Weter Supply Temp. 5 – 30°C Weter Supply Pressure .005–0.0MP (0.5-80°) CONDITIONS Voltage Range, Related Voltage = 166°C Weterseve the right to make charge in specifications and design without prior nature.  Install the ice marker property in accordance with the instructions and electrical connections stated in the instruction and installation manuals provided.  2. The ice production depends on the ambient and water temperatures.  Refer to the instruction and manual.	WEIGHT	(g)
ACCESSORIES Mounting Bracket, Installation Kit operating Mounting Bracket, Installation Kit operating Mounting Bracket, Installation Kit operating Mouse Supply Pressure: 0.05-0.8 MpP (0.5-8 kg) Versene Heapt Notinger Branger Rated Voltage ±6% We resent length to make changes in specifications and design without principle. In installation and electrical connections and electrical connections and electrical connections stated in the instruction and installation manuals provided. 2. The ice production depends on the ambient and water temperatures.  Refer to the instruction manual.	PACKAGE	εl
OPERATING Ambient Temp. 3- 40° (wider Stopply Temp. 3-35° COMDITIONS)  Valtage Ranger. Rated Voltage ±688  Voltage Ranger. Rated Voltage ±688  Visiting the fixer maker property in accordance with the instructions and leading water supply/drain connections and electrical connections stated of the instruction and installation manuals provided, water temperatures.  The ice production depends on the ambient and water temperatures.  Refer to the instruction and amount of the instruction and installation manuals provided, water temperatures.	ACCESSORIES	Mounting Bracket, Installation Kit
We reserve the right to make changes in specifications and design without prior notice.  In install the ice maker property in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instruction and installation manuals provided.  2. The ice production depends on the ambient and water temperatures.  Refer to the instruction manual.	OPERATING CONDITIONS	Ambient Temp.: 5 - 40° C, Water Supply Temp.: 5-35° C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltane Ranae: Rated Voltane +6%
connections and electrical conrections and electrical con- the instruction and installation. The ice production depends on water temperatures.  Netfer to the instruction manual particular to the instruction manual control of the instruction control of the instruction control of	*We reserve the right to 1. Install the i the instruct	n make changes in specifications and design without prior notice. ce maker properly in accordance with ions on location, water supply/drain
water temperatures. Refer to the instruction manual		s and electrical connections stated in ion and installation manuals provided. duction depends on the ambient and
	water temp Refer to the	eratures. 9 instruction manual. 43: E128 C101







### [b] FM-150AKE-HCN-SB

ITEM	HOSHIZAKI ELAKE ICE MAKEB
MODEL	FM-150AKE-HCN-SB
POWER SUPPLY	1 Phase 220-240V 50Hz Capacity: 0.69kVA (2.9A)
AMPERAGE	2.3A Starting: 9.6A
ELECTRIC	405W (Power Factor: 77%)
ICE PRODUCTION PER 24h	Approx.140kg (Ambient Temp. 10' C, Woter Temp. 10' C) Approx.120kg (Ambient Temp. 21' C, Woter Temp. 15' C) Approx.100kg (Ambient Temp. 32' C, Woter Temp. 21' C)
SHAPE OF ICE	
MAX. STORAGE CAPACITY	Not Applicable
WATER CONSUMPTION	Approx.0.14m² (Ambient Temp. 10' C, Water Temp. 10' C) Approx.0.12m² (Ambient Temp. 21' C, Water Temp. 15' C)
PER 24n	Temp. 32° C, Water Temp. 21°
OUTSIDE DIMENSIONS	560 (W) × 700 (D) × 780mm (H)
HEAT REJECTION	800W (Ambient temp.32* C,Water temp.21* C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet: R3/4
COMPRESSOR	Hermetic
CONDENSER	Fin and Tube Type, Air—cooled
EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
REFRIGERANT	R290/110g
BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
ICE MAKING WATER CONTROL	Float Switch and Water Valve
ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Micro Switch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHT	Net: 63kg (Gross: 70kg)
PACKAGE	Carton 665 (W) × 820 (D) × 950mm (H)
ACCESSORIES	Mounting Bracket, Installation Kit
OPERATING	Ambient Temp.: 5 - 40° C, Water Supply Temp.: 5-35° C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar)
CONDITIONS	



CONDITIONS Voltage Range: Rated Voltage £6%

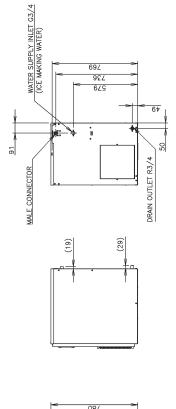
\*\*We reserve the right from the changes in specifications and design which prior notice.

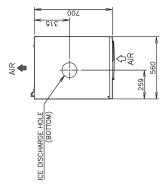
\*\*Install the ice marker properly in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instruction and installation manuals provided.

2. The ice production depends on the ambient and water temperatures.

\*\*Refer to the instruction manual.\*\*

3. Product Code: F128—C107

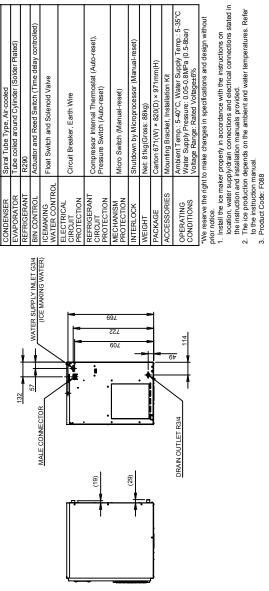


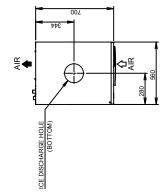


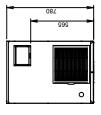


# [c] FM-300AKE-HC (Auxiliary code: D-0 or earlier)

MODEL	HOSHIZAKI FLAKE ICE MAKEK FM-300AKE-HC
POWER SUPPLY	1 Phase 220V-240V 50Hz Capacity: 1.53kVA (6.4A)
AMPERAGE	4.8A Starting: 20A
ELECTRIC CONSUMPTION	900W (Power Factor: 82.5%)
ICE PRODUCTION PER 24h	Approx.300kg (Ambient Temp. 10°C, Water Temp. 10°C, Water Temp. 10°C) Approx.250kg (Ambient Temp. 21°C, Water Temp. 16°C) Approx.250kg (Ambient Temp. 32°C, Water Temp. 16°C)
SHAPE OF ICE	
MAX. STORAGE CAPACITY	Not Applicable
WATER CONSUMPTION PER 24h	Approx. 0.300m² (Ambient Temp. 10°C, Water Temp. 10°C, Approx. 0.300m² (Ambient Temp. 21°C, Water Temp. 15°C) Water Temp. 15°C) Water Temp. 15°C) Water Temp. 21°C) Water Temp. 21°C)
OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
HEAT REJECTION	1840W(Ambient temp. 32°C, Water temp. 21°C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet: R3/4 (Rear)
COMPRESSOR	Hermetic
CONDENSER	Spiral Tube Type, Air-cooled Tube coiled around Cylinder (Solder Plated)
REFRIGERANT	R290
BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
ICEMAKING WATER CONTROL	Float Switch and Solenoid Valve
ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Micro Switch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHT	Net: 81kg(Gross: 88kg)
PACKAGE	Carton 671(W) × 820(D) × 971mm(H)
ACCESSORIES	Mounting Bracket, Installation Kit
OPERATING CONDITIONS	Ambient Temp.: 5-40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
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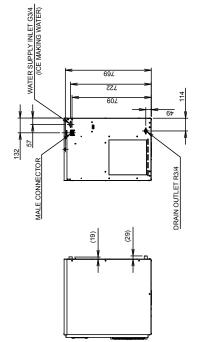


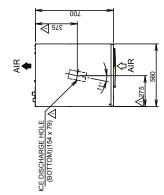


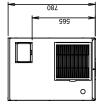


# [d] FM-300AKE-HC (Auxiliary code: D-1 to K-1)

ITEM	HOSHIZAKI FLAKE ICE MAKER
MODEL	FM-300AKE-HC
POWER SUPPLY	1 Phase 220V-240V 50Hz Capacity: 1.53kVA (6.4A)
AMPERAGE	4.8A Starting: 20A
ELECTRIC	900W (Power Factor: 82.5%)
ICE PRODUCTION PER 24h	Approx.300kg (Ambient Temp. 10°C, Water Temp. 10°C) Approx.250kg (Ambient Temp. 21°C, Water Temp. 15°C)
	Approx.205kg (Ambient Temp. 32°C, Water Temp. 21°C)
SHAPE OF ICE	Flake
MAX. STORAGE CAPACITY	Not Applicable
WATER CONSUMPTION PER 24h	Approx. 0.300m² (Ambient Temp. 10°C, Water Temp. 10°C, Water Temp. 10°C). Approx. 0.250m² (Ambient Temp. 21°C, Water Temp. 15°C). Mater Temp. 15°C) Approx. 0.250m² (Ambient Temp. 32°C, Water Temp. 21°C).
OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
HEAT REJECTION	1840W(Ambient temp. 32°C, Water temp. 21°C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet: R3/4 (Rear)
COMPRESSOR	Hermetic
CONDENSER	Spiral Tube Type, Air-cooled
EVAPORATOR	Tube coiled around Cylinder (Solder Plated) R290
BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
ICEMAKING WATER CONTROL	Float Switch and Solenoid Valve
ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Micro Switch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHI	Net: 81kg(Gross: 88kg)
ACCESSORIES	Mounting Bracket, Installation Kit
OPERATING CONDITIONS	Ambient Temp.: 5-40°C. Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
"We reserve the righ without prior notice.	"We reserve the right to make changes in specifications and design without prior notice.
1. Install the ice mak location, water sul stated in the instruction.  2. The ice production in the instruction in the instruction.	Install the ice maker property in accordance with the instructions on location, water supplyidant nonnections and electrical connections stated in the instruction and installation manuals provided.  The ice production depends on the ambient and water temperatures.
Kefer to the instruction manual. 3. Product Code: F088	otlon manual. 88

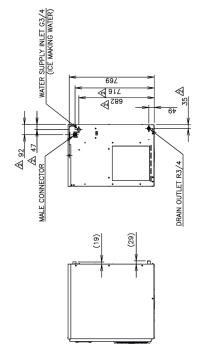


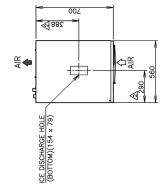


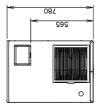


# [e] FM-300AKE-HC (Auxiliary code: K-2 or later)

	ITEM	HOSHIZAKI FLAKE ICE MAKER
	MODEL	FM-300AKE-HC
	POWER SUPPLY	e 220V-240V
	AMPERAGE	4.8A Starting: 20A
	ELECTRIC CONSUMPTION	900W (Power Factor: 82.5%)
	ICE PRODUCTION PER 24h	Approx.250kg (AT. 10°C, WT. 10°C) Approx.250kg (AT. 21°C, WT. 15°C)
	SHAPE OF ICE	(AI. 32 C, WI.
	MAX. STORAGE CAPACITY	Not Applicable
	WATER CONSUMPTION	Approx.0.300π² (AT. 10°C, WT. 10°C) Approx.0.250π² (AT. 21°C, WT. 15°C)
	OLITSINE DIMENSIONS	Approx.0.205m² (AT. 32°C, WT. 21°C) 56Ω(W) × 7ΩΩ(Ω) × 78Ωmm(H)
	HEAT REJECTION	
	CABINET	Stainless Steel, Galvanized Steel (Rear)
< 4	INSULATION	Urethane Foam
<b>«</b>	INSULATION FOAM BLOWING AGENT	HFC-free
4	ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
	WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
	DRAIN SYSTEM	Outlet: R3/4 (Rear)
	COMPRESSOR	Hermetic
	CONDENSER	oled
	EVAPORATOR	
≪	REFRIGERANT	
	BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
	ICE MAKING WATER CONTROL	Float Switch and Solenoid Valve
	ELECTRIC CIRCUIT	Circuit Breaker, Earth Wire
	REFRIGERANT CIRCUIT	Compressor Internal Thermostat (Auto-reset),
	PROTECTION	Pressure Switch (Auto-reset)
	MECHANISM PROTECTION	Micro Switch (Manual-reset)
	ICE MAKER PROTECTION	Shutdown by Microprocessor (Manual-reset)
	WEIGHT	81kg(Gross: 88kg)
	PACKAGE	Carton 665(W) x 820(D) x 950mm(H)
	ACCESSORIES	Mounting Bracket, Installation Kit
	OPERATING CONDITIONS	Ambient Temp.: 5 – 40°C, Water Supply Temp.: 5–35°C Water Supply Pressure: 0.05–0.8MPa(0.5–8bar)
	*We reserve the right t	Voltage Range: Nated Voltage FB.»  We reserve the right to make changes in specifications and design without prior notice.
	<ol> <li>Install the i the instruct</li> </ol>	Install the ice maker properly in accordance with the instructions on location, water supply/drain
	connections the instruct	connections and electrical connections stated in the instruction and installation manuals provided. The ice production depends on the ambient and
	water temp manual.	eratures. Refer to the instruction
	3. Product Code: F088	de: F088

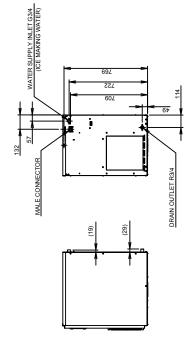






# [f] FM-300AKE-HCN (Auxiliary code: D-0 or earlier)

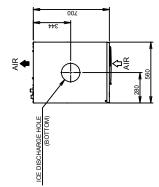
ITEM	HOSHIZAKI NUGGET ICE MAKER
MODEL	FM-300AKE-HCN
POWER SUPPLY AMPERAGE	1 Phase 220V-240V 50Hz Capacity: 1.53KVA (6.4A) 5.1A Starting: 20A
ELECTRIC CONSUMPTION	960W (Power Factor: 84.2%)
ICE PRODUCTION PER 24h	Approx.250kg (Antibient Temp. 10°C, Water Temp. 10°C, Water Temp. 10°C, Approx.210kg (Antibient Temp. 21°C, Water Temp. 16°C) Approx.175kg (Antibient Temp. 32°C, Approx.175kg (Antibient Temp. 32°C, Water Temp. 21°C)
SHAPE OF ICE	Nugget
MAX. STORAGE CAPACITY	Not Applicable
C L	Approx.0.250m³ (Ambient Temp. 10°C, Water Temp. 10°C)
CONSUMPTION	Approx.0.210m³ (Ambient Temp. 21°C, Water Temp. 15°C)
PEK 24n	Approx.0.175m³ (Ambient Temp. 32°C, Water Temp. 21°C)
OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
HEAT REJECTION	1840W(Ambient temp. 32°C, Water temp. 21°C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Nugget Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet R3/4 (Rear)
COMPRESSOR	Hermetic Spiral Tube Type, Air-cooled
EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
REFRIGERANT	R290
BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
WATER CONTROL	Float Switch and Solenoid Valve
ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
REFRIGERANT CIRCUIT	Compressor Internal Thermostat (Auto-reset),
PROTECTION	Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Microswitch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHT	Net. 81kg(Gross: 88kg)
PACKAGE	Carton 671(W) × 820(D) × 971mm(H)
ACCESSORIES	Mounting Bracket, Installation Kit
OPERATING CONDITIONS	Ambient Temp.: 5-40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
*We reserve the right	"We reserve the right to make changes in specifications and design without
Justall the ice make	profit install the ice maker property is accordance with the instructions on



Install the ice maker properly in accordance with the instructions on location, water supply/dani comerclors and electrical connections stated in the instruction and installation manuals provided.

 The ice production depends on the ambient and water temperatures. Refer the the instruction manual.

 Product Ocole: 1088-07106.





# [g] FM-300AKE-HCN (Auxiliary code: D-1 to K-1)

_		GINAM TO: FI OOLIM MACILIOOL
	II EIM	HUSHIZAKI NUGGEL ICE MAKEK
	MODEL	
	POWER SUPPLY	1 Phase 220V-240V 50Hz Capacity: 1.53kVA (6.4A)
	AMPERAGE	5.1A Starting: 20A
	ELECTRIC CONSUMPTION	960W (Power Factor: 84.2%)
	ICE PRODUCTION PER 24h	Approx.250kg (Ambient Temp. 10°C, Water Temp. 10°C). Approx.210kg (Ambient Temp. 21°C, Water Temp. 15°C). Approx.175kg (Ambient Temp. 32°C,
_	SHAPE OF ICE	Nugget
•	MAX. STORAGE CAPACITY	Not Applicable
	WATER CONSUMPTION PER 24h	Approx.0.250m* (Ambient Temp. 10°C, Wlater Temp. 10°C, Water Temp. 10°C). Approx.0.210m* (Ambient Temp. 21°C, Wlater Temp. 15°C). Approx.0.157m* (Ambient Temp. 32°C, Approx.0.157m*) (Water Temp. 21°C).
	OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
_	HEAT REJECTION	1840W(Ambient temp. 32°C, Water temp. 21°C)
_	CABINET	Stainless Steel, Galvanized Steel (Rear)
	ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Nugget Ice)
	WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
_	DRAIN SYSTEM	Outlet: R3/4 (Rear)
	COMPRESSOR	Hermetic
_	CONDENSER	Spiral Tube Type, Air-cooled
_	EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
_	REFRIGERANT	R290
	BIN CONTROL ICEMAKING	Actuator and Reed Switch (Time delay controlled)
_	WATER CONTROL	rioal Switch and Solehold valve
	ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
•	REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
	MECHANISM PROTECTION	Microswitch (Manual-reset)
_	INTERLOCK	Shutdown by Microprocessor (Manual-reset)
	WEIGHT	Net: 81kg(Gross: 88kg)
↲	PACKAGE	Carton 665(W) × 820(D) × 950mm(H)
	ACCESSORIES	Mounting Bracket, Installation Kit
	OPERATING	Ambient Temp.: 5-40°C, Water Supply Temp.: 5-35°C

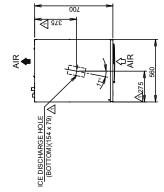
Spiral Tube Type, Air-cooled	Tube coiled around Cylinder (Solder Plated)	R290	Actuator and Reed Switch (Time delay controlle	Float Switch and Solenoid Valve	Circuit Breaker, Earth Wire	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)	Microswitch (Manual-reset)	Shutdown by Microprocessor (Manual-reset)	Net: 81kg(Gross: 88kg)	Carton 665(W) × 820(D) × 950mm(H)	Mounting Bracket, Installation Kit	Ambient Temp.: 5-40°C, Water Supply Temp.: 5 Water Supply Pressure: 0.05-0.8MPa (0.5-8bar Voltage Range: Rated Voltage±6%	"We reserve the right to make changes in specifications and design will
CONDENSER	EVAPORATOR	REFRIGERANT	BIN CONTROL A	ICEMAKING WATER CONTROL	ELECTRICAL CIRCUIT PROTECTION	REFRIGERANT C CIRCUIT PROTECTION	MECHANISM N	INTERLOCK	WEIGHT	A PACKAGE	ACCESSORIES	OPERATING V CONDITIONS V	*We reserve the right to
				S WATER)						`			

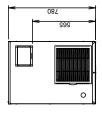
prior rotice.

In risal lite the maker property in accordance with the instructions on location, water supply/drain connections and electrical connections stated in the instruction and installation manuals provided.

2. The ice production depends on the ambient and water temperatures. Refer to the instruction manual.

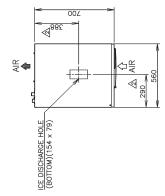
WATER SUPPLY INI (ICE MAKING 694 604 MALE CONNECTOR DRAIN OUTLET R3/4





# [h] FM-300AKE-HCN (Auxiliary code: K-2 or later)

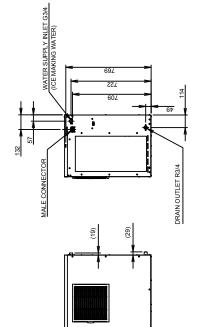
HOSHIZAKI NUGGET ICE MAKER	220-240V 50Hz 1.53kVA (6.4A)	Running: 5.1A Rated Motor: 5.1A Starting: 20A	Power Factor: 84	Approx. 250kg (AT. 10°C, WT. 10°C) Approx. 210kg (AT. 21°C, WT. 15°C) Approx. 175kg (AT. 32°C, WT. 21°C)	1	olicable	Approx. 0.250m (AT. 10°C, WT. 10°C) Approx. 0.210m (AT. 21°C, WT. 15°C) Approx. 0.175m (AT. 32°C, WT. 21°C)	) × 700(D) × 780m	1840W (AT.32°C,WT.21°C)	Urethane Foam	HFC-free	Stainless Steel, Galvanized Steel (Rear)	Thin ice forming inside Cylinder (Nugget Ice)	Direct Connection to Water Main, Inlet: G3/4 (Rear)	Outlet: R3/4 (Rear)	Hermetic	Spiral Tube Type, Air—cooled	Tube coiled around Cylinder (Solder Plated)		Actuator and Reed Switch (Time delay controlled)	Float Switch and Solenoid Valve	Circuit Breaker. Earth Wire	The second of th	Compressor internal inermostat (Auto-reset), Pressure Switch (Auto-reset)	Microswitch (Manual-reset)	Shutdown by Microprocessor (Manual-reset)	81kg(Gross 88kg)	Carton 665(W) × 820(D) × 950mm(H)	Mounting Bracket, Installation Kit	Ambient Temp.: 5 - 40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa(0.5-8bar)	Voltage Kange: Kated Voltage±5% *We reserve the right to make changes in specifications and design without prior notice.	Install the ice maker properly in accordance with the instructions on location, water supply/drain	nd electrical connections stated in	epends on the ambi	Product Code: F088-C106
	POWER SUPPLY Co	AMPERAGE S	ELECTRIC CONSUMPTION S	ICE PRODUCTION A PER 24h A	SHAPE OF ICE N	MAX. STORAGE CAPACITY N	WATER CONSUMPTION A PER 24h	OUTSIDE DIMENSIONS 5	HEAT REJECTION 1	NSULATION L	INSULATION FOAM BLOWING AGENT	CABINET	ICE MAKING SYSTEM T	WATER SUPPLY SYSTEM D		COMPRESSOR	CONDENSER	EVAPORATOR T	A REFRIGERANT F	BIN CONTROL	ICE MAKING WATER CONTROL	CUIT	1	PROTECTION P	MECHANISM PROTECTION N	ICE MAKER S	WEIGHT 8	PACKAGE	ACCESSORIES	OPERATING CONDITIONS W	*We reserve the right to m	<ol> <li>Install the ice the instructio</li> </ol>	connections of	2. The ice production d	 <ol><li>Product Code</li></ol>
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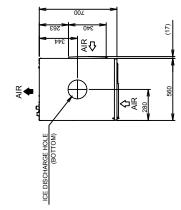


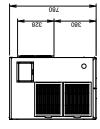


# [i] FM-480AKE-HC (Auxiliary code: D-0 or earlier)

MODEL	HOSHIZAKI FLAKE ICE MAKEK
٠,	1 Phase 220V-240V 50Hz Capacity: 2.2kVA (8.8A)
AMPERAGE	
ELECTRIC	1100W (Power Factor: 89.1%)
ICE PRODUCTION PER 24h	Approx. 450kg (Ambient Temp. 10°C, Water Temp. 10°C, Approx. 400kg (Ambient Temp. 21°C, Water Temp. 15°C) Approx. 30kg (Ambient Temp. 32°C, Water Temp. 21°C)
SHAPE OF ICE	
MAX. STORAGE CAPACITY	Not Applicable
WATER CONSUMPTION PER 24h	Approx.0.450m² (Ambient Temp. 10°C, Water Temp. 10°C, Water Temp. 10°C) Approx.0.400m² (Ambient Temp. 21°C, Water Temp. 15°C) Approx.0.4540m² (Ambient Temp. 32°C, Water Temp. 21°C)
OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
HEAT REJECTION	2190W(Ambient temp. 32°C, Water temp. 21°C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet: R3/4 (Rear)
COMPRESSOR	Hermetic Spiral Tube Type Air-cooled
EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
REFRIGERANT	R290
ICEMAKING	Actuator and Reed Switch (Time delay controlled) Float Switch and Solenoid Valve
WATER CONTROL ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Micro Switch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHT	Net: 92kg(Gross: 99kg)
PACKAGE	Carton 671(W) × 820(D) × 971mm(H)
OPERATING CONDITIONS	mounting bracket, instanction for Ambient Temp.: 5-40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
*We reserve the right	"We reserve the right to make changes in specifications and design without
1. Install the ice make location, water sup in the instruction at 2. The ice production Refer to the instruction	Install the ice maker properly in accordance with the instructions on icealion, water supplydrain connections and electrical connections stated the instruction and installation manuals provided.  The ice production depends on the ambient and water temperatures. Refer to the instruction manual.
3. Product Code: F087	



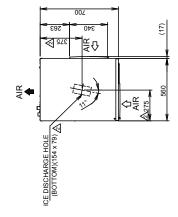


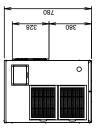


# [j] FM-480AKE-HC (Auxiliary code: D-1 to K-1)

ITEM	HOSHIZAKI FLAKE ICE MAKER
MODEL	FM-480AKE-HC
POWER SUPPLY	1 Phase 220V-240V 50Hz Capacity: 2.2kVA (8.8A)
AMPERAGE	5.3A Starting: 27A
ELECTRIC CONSUMPTION	1100W (Power Factor: 89.1%)
ICE	Approx.450kg (Ambient Temp. 10°C, Water Temp. 10°C)
PRODUCIION PER 24h	Approx.400kg (Ambient Temp. 21°C, Water Temp. 15°C) Approx.340kg (Ambient Temp. 32°C, Water Temp. 21°C)
SHAPE OF ICE	Flake
MAX. STORAGE CAPACITY	Not Applicable
	Approx.0.450m³ (Ambient Temp. 10°C,
WATER	Approx.0.400m. (Ambient Temp. 21°C,
PER 24h	Water Temp. 15°C) Approx.0.340m³ (Ambient Temp. 32°C, Water Temp. 21°C)
OUTSIDE	560(W) × 700(D) × 780mm(H)
HEAT REJECTION	2190W(Ambient temp. 32°C, Water temp. 21°C)
CABINET	Stainless Steel, Galvanized Steel (Rear)
ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Flake Ice)
WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
DRAIN SYSTEM	Outlet: R3/4 (Rear)
COMPRESSOR	Hermetic
CONDENSER	Spiral Tube Type, Air-cooled
EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
REFRIGERANT	R290
BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
ICEMAKING WATER CONTROL	Float Switch and Solenoid Valve
ELECTRICAL	Circuit Brooker Forth Mire
PROTECTION	Circuit preamer, Earlin Wille
REFRIGERANT	Compressor Internal Thermostat (Auto-reset),
PROTECTION	Pressure Switch (Auto-reset)
MECHANISM PROTECTION	Micro Switch (Manual-reset)
INTERLOCK	Shutdown by Microprocessor (Manual-reset)
WEIGHT	Net: 92kg(Gross: 99kg)

rioat Switch and Solehold valve	Circuit Breaker, Earth Wire	Compressor Internal Thermostat (A Pressure Switch (Auto-reset)	Micro Switch (Manual-reset)	Shutdown by Microprocessor (Manu	Net: 92kg(Gross: 99kg)	Carton 665(W) × 820(D) × 950mm(	Mounting Bracket, Installation Kit	Ambient Temp.: 5-40°C, Water Sup Water Supply Pressure: 0.05-0.8MF Voltage Range: Rated Voltage±6%	WWe reserve the right to make changes in specifications an orior notice.	<ol> <li>Install the ice maker properly in accordance with the inst on location, water supply/drain connections and electrics</li> </ol>	connections stated in the instruction and installation mar provided.	<ol> <li>The ice production depends on the ambient and water temperatures. Refer to the instruction manual.</li> <li>Product Code: F087</li> </ol>
WATER CONTROL	ELECTRICAL CIRCUIT PROTECTION	REFRIGERANT CIRCUIT PROTECTION	MECHANISM PROTECTION	INTERLOCK	WEIGHT	PACKAGE	ACCESSORIES	OPERATING CONDITIONS	*We reserve the right prior notice.	<ol> <li>Install the ice make on location, water s</li> </ol>	connections stated provided.	<ol> <li>The ice production c temperatures. Refer</li> <li>Product Code: F087</li> </ol>
	132	MALE CONNECTOR WATER SUPPLY INLET G3/4					.8.	694	(59)			DRAIN OUTLET R3/4 9

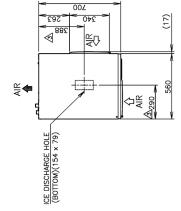


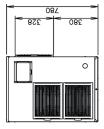


### [k] FM-480AKE-HC (Auxiliary code: K-2 or later)

AMPERAGE  ELECTRIC  ELECTRIC  ELECTRIC  LONGUMATION  APPROx.450kg (AT. 10°C, WT. 10°C)  PER 24h  SHAPE OF ICE  WX.500kg CARJOT, WT. 21°C)  APPROX.0.450mf (AT. 20°C, WT. 21°C)  APPROX.0.450mf (AT. 32°C, WT. 21°C)  ARIBY SYSTBM  APPROX.0.450mf (AT. 32°C, WT. 21°C)  ARIBY SYSTBM  APPROX.0.450mf (AT. 32°C, WT. 21°C)  ARIBY SYSTBM  A	ITEM MODEL POWER SUPPLY	HOSHIZAKI FLAKE ICE MAKER FM-480AKE-HC 1 Phase 220V-240V 50Hz Capacity: 2.2kVA (8.8A)
ICE PRODUCTION APPROX.450kg (AT. 10°C, WT. 10°C) PER 24h APPROX.40kg (AT. 21°C, WT. 21°C) SHAPE OF ICE FIcke WX.500WE CAPADIT APPROX.0.450m² (AT. 21°C, WT. 10°C) PER 24h APPROX.0.450m² (AT. 21°C, WT. 10°C) PER 24h APPROX.0.450m² (AT. 21°C, WT. 10°C) PER 24h APPROX.0.450m² (AT. 21°C, WT. 10°C) APPROX.0.450m² (AT. 21°C, WT. 21°C) OUISIDE DIMENSIONS SECO(W) × 700(D) × 780mm(H) HEAT REJECTION 190W (AT. 32°C, WT. 21°C) CABINET Stainless Steel, Galvanized Steel (Flake WRITS SIPPLY STEM) INSULATION Urethanne Foam INSULATION OUTHER TS.3/4 (Rear) COMPRESSOR HEMMER BLOWING AGENT REPRICERANT REPRIC	AMPERAGE ELECTRIC CONSUMPTION	Starting: 27A W (Power Factor: 89.17
	ICE PRODUCTION PER 24h	10°C, WT. 21°C, WT. 32°C, WT.
	SHAPE OF ICE	Flake
	MAX. STORAGE CAPACITY	5
	WATER CONSUMPTION PER 24h	0.C, WI.
HEAI REJECTION  CABINET  Stainless Steel, Galvanized Steel (Fink WIRSULATION)  Urethane Foam  BIOUNING AGENT  INSULATION  Urethane Foam  BIOUNING AGENT  WIRSUNG SYSTEM  WIRSUNG SYSTEM  WIRSURPRING SYSTEM  WIRSUNG CONDENSER  Spiral Tube Type, Air—cooled  CONDENSER  Spiral Tube Type, Air—cooled  EACH REPRICERANT  RAPORATOR  WIRSUNG CONDENSER  BIN CONTROL  ELECTRIC CIRCUIT  CIRCUIT Breaker, Earth Wire  RETRICEMANT  RETRICEMANT  RETRICEMANT  RETRICEMANT  RETRICEMANT  MICRO Switch (Manual—reset)  MECHATION  WEIGHT  CATON GESSON MAIN MICRO Switch (Manual—Reset)  MECHATION  WEIGHT  CATON GESSON MAIN MICRO SWITCH (Manual—Reset)  MECHATION  WEIGHT  CATON GESSON MAIN SAUGUD × 950mr  ACCESSORIES  Water Supply Pressure supply frem: 16 Manual temps: 5 – 40°C, water supply frem: 16 Manual manuals providence and reproduction and installation manuals providence on the instruction and installation manuals providence on the instruction manual short of manual manuals providence manual manuals providence manual manuals providence water temperatures. Refer to the instruction manual manual manuals providence manual m	OUTSIDE DIMENSIONS	× اي
CABINET  INSULATION  Urethane Foam  BUNNING AGENT  ICE MARING SYSTEM  WIRE SUPPLY SYSTEM  Urethane Foam  BUNNING AGENT  Urethane Foam  HFC—free  COMPERSOR  COMPRESSOR  Hermetic  CONDENSER  Spiral Tube Type, Air—cooled  EAPPORATOR  BIN CONTROL  CONDENSER  Spiral Tube Type, Air—cooled  EAPPORATOR  REPRICERANT  R290/145g  BIN CONTROL  CITCUIT Bread Switch (Time delay control  CITCUIT Breadker, Earth Wire  RETRICEMENT  RETRICEMENT  RETRICEMENT  RETRICEMENT  CITCUIT Breadker, Larth Wire  RETRICEMENT  RETRICEME	HEAT REJECTION	2190W (AT.32°C,WT.21°C)
INSULATION Urethane Foam  NSULATION WAS AME  NSULATION WAS AME  NSULATION ASSULAN HFC—free  ELEMANNE SISTEM Direct Connection to Water Main, Inlet: 63/4  DRAIN SYSTEM Direct Connection to Water Main, Inlet: 63/4  DRAIN SYSTEM Outlet: R3/4 (Rear)  CONDENSER Spiral Tube Type, Air—cooled  ENAPORATOR Tube coiled around Cylinder (Solder PI  REFRIGERANT R290/1459  BIN CONTROL Actuator and Reed Switch (Time delay conting the RAMEEWAY CHANGE Float Switch and Solenoid Valve  ELECTRIC CIRCUIT  CIRCUIT Breaker, Earth Wire  RETRIGERANT CIRCUIT Compressor Internal Thermostat (Auto—reset),  PROTECTION  MICHOLANIA Micro Switch (Manual—reset)  MECHANIA Shutdown by Microprocessor (Manual—PROTECTION)  WEIGHT  ACCESSORIES Mounting Bracket, Installation Kit  ACCESSORIES Mounting Bracket, Installation Kit  Ambient Temp.: 5 – 40°C, Water Supply Pressure: 0.05-0.8MP9(0.5-0.8MP9(0	CABINET	Steel, Galvanized
MERION FOAM HFC—free BLOWING AGENT ICE MARINS SYSTEM Outlet: R3/4 (Rear) COMPRESSOR Hermetic COMPRESSOR Hermetic COMPRESSOR Hermetic CONDENSER Spiral Tube Type, Air—cooled EVAPORATOR Tube coiled around Cylinder (Solder PI REFRICERANI R290/145g BIN CONTROL GENARING FREEDERIC CROUNT CIRCUIT BROOKED FROMECTION FREEDERIC CROUNT CIRCUIT BROOKED FROMECTION	INSULATION	Urethane Foam
COMPRESSOR   Thin ice forming inside Cylinder (Flake MRIR SIPRY SYSTEM   Direct Connection to Water Main, Inlet: 63/4	INSULATION FOAM BLOWING AGENT	HFC-free
WIRR SIPPLY SYSTEM Direct Connection to Water Main, Inlet: 63/4 DRAIN SYSTEM Outlet: R3/4 (Rear) CONDENSES Piral Tube Type, Air—cooled EVAPORATOR Tube coiled around Cylinder (Solder PI REPRIGERANT R290/1459 BIN CONTROL Actuator and Reed Switch (Time delay conti ICE MAKING WATER CONTROL Circuit Breaker, Earth Wire REPRESEND CROUNT Circuit Breaker, Earth Wire RECHANISM Micro Switch (Manual—reset) RECHANGER Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual— RECHANISM Micro Switch (Manual—reset) RECHANGE Shutdown by Microprocessor (Manual—reset) RECHANISM Microprocessor (Manual—reset) RECHANISM MICROPROCESTOR (Manual—reset) RECHANISM MICROPROCESTOR (Manual—reset) RECHANGE Shutdown b	ICE MAKING SYSTEM	
DRAIN SYSTEM Outlet: R3/4 (Rear)  COMPRESSOR Hermetic  CONDENSER Spiral Tube Type, Air—cooled  EVAPORATOR Tube coiled around Cylinder (Solder PI  REFRIGERANI R290/1459  BIN CONINGO. Actuator and Read Switch (Time delay conti  CE WAKING  WATER CONTROL  CITCLIS SWITCH and Solenoid Valve  FERGERACINGOIT  CITCLIS SWITCH and Solenoid Valve  FERGERIC CROUNT  CITCLIS SWITCH AND Solenoid Valve  FERGERIC CROUNT  CITCLIS SWITCH (Manual—reset)  PROTECTION  FROME SWITCH (Manual—reset)  PROTECTION  WEIGHT  PROVECTION  WEIGHT  ACCESSORIES  Mounting Bracket, Installation Kit  Ambient Temp. 5 - 40°, Wabre(0.5-0.8MPa(0.5-0.8M	WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
COMPRESSOR Hermetic CONDENSER Spiral Tube Type, Air-cooled CONDENSER Spiral Tube Type, Air-cooled EVAPORATOR Tube coiled around Cylinder (Solder PI REFRIGERANI R290/145g BIN CONTROL Actuator and Reed Switch (Time delay conti GE MAKING WATER CONTROL CITCUIT SWItch and Solenoid Valve ELETIER CIRCUIT CITCUIT Breaker, Earth Wire REDISCRIVING CINCUIT Compressor Internal Thermostat (Auto-reset), PROTECTION MECHANISM Micro Switch (Manual-reset) PROTECTION WEIGHT PROTECTION WEIGHT ACCESSORIES Mounting Bracket, Installation Kit Ambient Temps: 5 - 40°, Wabre Supply Pressure: 0.05-0.8MPa(0.5-0.8MPa	DRAIN SYSTEM	4
CONDENSER Spiral Tube Type , Air—cooled EVAPORATOR Tube coiled around Cylinder (Solder PI REFRIGERANT R290/1459 BIN CONTROL Actuator and Reed Switch (Time delay control of ELECTRICO ROUTED Actuator and Reed Switch (Time delay control of ELECTRICO ROUTED CITCLAIR Switch and Solenoid Valve REPRIGEMENT COUNTESON Fressure Switch (Auto-reset) PROTECTION Pressure Switch (Auto-reset) PROTECTION PROSECTION PROSECTION MICRO Switch (Manual—reset) REPRICE NOTECTION PROTECTION PROTECTION PROTECTION PROTECTION PROTECTION PROTECTION MICRO Switch (Manual—reset) PROTECTION PROTECTION PROTECTION MICRO Switch (Manual—reset) PROTECTION PROTECTION MICRO Switch (Manual—reset) PROTECTION MICRO Switch (Manual—reset) PROTECTION WHEN THE SWITCH (MANUAL) PACKAGE Carton 665(W) x 820(D) x 950mr ACCESSORIES Mounting Bracket, Installation Kit Antolaid Hene Supply Tensure Stated We reserve the right to make changes in specifications and design without price the instructions and electrical connections stated the instruction and installation manuals provider temperatures. Refer to the instruction manuals provider connections and electrical con	COMPRESSOR	Hermetic
EVAPORATOR Tube coiled around Cylinder (Solder Plean ENARIGERANT R290/145g BIN CONTROL Actuator and Reed Switch (Time delay control Maries Courred Actuator and Reed Switch (Time delay control ELECTRIC GROUNT Circuit Breaker, Earth Wire PROTECTION PROSECTION PROSECTION PROTECTION PROTECTION MICRO Switch (Manual—reset) PROTECTION	CONDENSER	, Air-cooled
REHRICERANI RY290/1459 BIN CONTROL BIN CONTROL BLACKING BLECTRIC GROUP CITCLUIT Breaker, Earth Wire ELECTRIC GROUP FROEEDIN REPRESENT CROUT CITCLUIT Breaker, Earth Wire PROTECTION MICRO Switch (Manual—reset) PROTECTION MICRO Switch (Manual—reset) MICRO S	EVAPORATOR	oiled around Cylinder
IBN CON KOL Actuator and Reed Switch (Inme delay continue MARINE)  REMERCENATION  FLOAT Switch and Solenoid Valve  RETREGENATION  FIGURATION  RECTION  RECHAIS  RECHAIS  RECHAIS  RECHAIS  RECTION  RECHAIS  RECTION  RECHAIS  RECTION  RECHAIS  RECTION  RECHAIS  RECTION  RECTI	REFRIGERANT	145g
Circuit Breaker, EETERIC CIRCUIT   Circuit Breaker, Earth Wire PROTECTION   PROSECUE SWItch (Auto-reset)   PROTECTION   PROSECUE SWITCH (Auto-reset)   PROTECTION   PROSECUE SWITCH (Auto-reset)   PROTECTION   PROTECTION   PROTECTION   PROTECTION   PROTECTION   PROTECTION   PROTECTION   PROTECTION   PACKAGE   Carton 665(W) x 820(D) x 950mn   PACKAGE   PAC	BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
ELECTRIC CIRCUIT  FRENEERWI (RICUIT  PROTECTION  PROTECTION  MICHANGER  SHUGHT  CONTROL (MANUAL CARRES)  RECHANGER  SHUGHT  SALGE (SOUN)  RECHANGER  SHUGHT  SALGE MOUNTING Bracket, Installation Kit  Ambient Temps. 5 – 40°C, Witer Supply Pressures 0.05 – 0.8MPa(0.5)-  Welchart  Ambient Temps. 5 – 40°C, Witer Supply Pressures 0.05 – 0.8MPa(0.5)-  Wet reserve the right to make changes in specifications and design without prictions and electrical connections and electrical connections and electrical connections and electrical connections stated the instruction and installation manuals provident water temperatures. Refer to the instruction may instruction and installation manuals provident water temperatures. Refer to the instruction main dispendence on the ambient and water temperatures. Refer to the instruction main dispendence on the ambient and water temperatures. Refer to the instruction manual control on the control on manual control on the control on manual control on manual control on manual control on manual control on the control on the control on manual control on the control on	ICE MAKING WATER CONTROL	Switch and Solenoid
RETRIGEMENT COMPressor Internal Thermostat (Auto-reset), MECHANISM MICRO Switch (Auto-reset) MECHANISM NICTO Switch (Manual-reset) ICE MAKER Shutdown by Microprocessor (Manual-reporterion) MEIGHT SEACESSORIES Mounting Bracket, Installation Kit ACCESSORIES Mounting Bracket, Installation Kit AMBRINE COMPINION Water Supply Pressure: 0.050-08490(0.5). We reserve the right to make changes in specifications and design without pric. Install the instructions on location, water supply/dra connections and electrical connections stated the instruction and installation and installation on location, water supply/dra connections and electrical connections stated the instruction and installation manuals provid water temperatures. Refer to the instruction manual sprovid manual sprovid. 3. Product Code: FO87	ELECTRIC CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
MICHANISM MICRO Switch (Manual-reset) PROTECTION GE MARCH Shutdown by Microprocessor (Manual-represent) MEIGHT 92kg(Gross: 99kg) PACKAGE Carton 665(W) x 820(D) x 950mn ACCESSORIES Mounting Bracket, Installation Kit AMBIERT Temp.: 5 - 40°, Water Supply Temp: OPENING CNOTIONS Voltage Range: Rated Voltage±6% We reserve the right to make danges in specifiadons and design without priv. Install the ice maker properly in accordance with the instructions on location, water supply/dra connections and electrical connections stated the instruction and installation manuals provide water temperatures. Refer to the instruction manuals provide manuals provided water temperatures. Refer to the instruction manuals provided manuals provided the instruction manuals provided water temperatures. Refer to the instruction manuals provided. 3. Product Code: FO87	REFRIGERANT CIRCUIT	Compressor Internal Thermostat (Auto-reset),
Shutdown by Microprocessor (Manual-Interaction)   Shutdown by Microprocessor (Manual-Interaction)   PACKAGE   Carton 665(W) × 820(D) × 950mm	MECHANISM	Switch (Manual—
WEIGHT 92kg(Gross: 99kg)  PACKAGE Carton 665(W) x 820(D) x 950mn  ACCESSORIES Mounting Bracket, Installation Kit ACCESSORIES Mounting Bracket, Installation Kit Ambient Temp.: 6 40°, Water Supply Pressure: 0.05-0.8MPa(0.5	ICE MAKER	
ACCESSORIES Mounting Bracket, Installation Kit ACCESSORIES Mounting Bracket, Installation Kit ACCESSORIES Mounting Bracket, Installation Kit Accessories of the Supply Pressures CORD-O. Subracket Supply Bracket B	WEIGHT	92kg(Gross: 99kg)
ACCESSORIES Mounting Bracket, Installation Kit ACCESSORIES Mounting Bracket, Installation Kit American Mounting Bracket, Installation Water Supply Pressure: 0.05-0.8740(0.5-0.540) Water Supply Pressure: 0.05-0.8740(0.5-0.540) Water Supply Pressure: 0.05-0.8740(0.5-0.540) Water Supply Proportion of the instructions on location, water supply/draconnections and electrical connections stated the instruction and installation manuals provide water temperatures. Refer to the instruction manual should water temperatures. Refer to the instruction manual.	PACKAGE	Carton 665(W) x 820(D) x 950mm(H)
Ambient Temps: 5 - 40°C, Wister Supply Temps: 6 PERMING CONDITIONS   Water Supply Pressures: 0.05-0.8MPa(0.5	ACCESSORIES	Mounting Bracket, Installation Kit
We reserve the right to make changes in specifications and design without price.  1. Install the ice maker properly in accordance with instructions on location, water supply/dra connections and electrical connections stated the instruction and installation manuals proving.  2. The ice production depends on the ambient an water temperatures. Refer to the instruction manual.  3. Product Code: FO87	OPERATING CONDITIONS	Ambient Temp.: 5 - 40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa(0.5-8bar)
	*We reserve the right t	Voltage Kange: Kated Voltage±6% o make changes in specifications and design without prior notice.
	<ol> <li>Install the i the instruct</li> </ol>	ce maker properly in accordance with ions on location, water supply/drain
		s and electrical connections stated in ion and installation manuals provided. duction depends on the ambient and
		eratures. Refer to the instruction
		de: F087

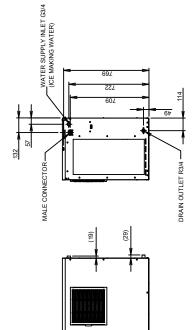
△ 96 → △ 47 → △ WATER SUPPLY INLET G3/4 (ICE MAKING WATER)	DRAIN OUTLET R3/4  49  716  716  716  716	} ★ 
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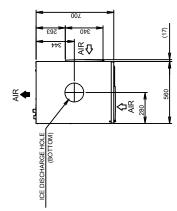


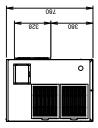


# [I] FM-480AKE-HCN (Auxiliary code: D-0 or earlier)

	MUL	CINE TO CHANGE IN COLOR
	MODEL	FM-480AKE-HCN
<	POWER SLIPPLY	1 Phase 220V-240V 50Hz Capacity: 2 2kVA (8 8A)
1	AMPERAGE	
<	ELECTRIC	1170W (Power Factor: 90.7%)
1	ICE PRODUCTION PER 24h	Approx.380kg (Ambient Temp. 10°C, Water Temp. 10°C, Approx.330kg (Ambient Temp. 21°C, Water Temp. 15°C) Approx.270kg (Ambient Temp. 22°C, Water Temp. 21°C)
	SHAPE OF ICE	
	MAX. STORAGE CAPACITY	Not Applicable
	WATER CONSUMPTION PER 24h	Approx.0.380m² (Ambient Temp. 10°C, Water Temp. 10°C, Water Temp. 1°C) Approx.0.330m² (Ambient Temp. 21°C, Water Temp. 15°C) Approx.0.270m² (Ambient Temp. 32°C, Water Temp. 21°C)
	OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
	HEAT REJECTION	2190W(Ambient temp. 32°C, Water temp. 21°C) Stainless Shall Calvanized Shall Dear
	ICE MAKING	Thin ice forming inside Cylinder (Nugget Ice)
	WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
	DRAIN SYSTEM	Outlet: R3/4 (Rear)
	COMPRESSOR	
	CONDENSER	Spiral Tube Type, Ar-cooled Tube coiled around Cylinder (Solder Plated)
	REFRIGERANT	R290
	BIN CONTROL	Actuator and Reed Switch (Time delay controlled)
33/4	ICEMAKING WATER CONTROL	Float Switch and Solenoid Valve
	ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
	REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
	MECHANISM PROTECTION	Microswitch (Manual-reset)
	INTERLOCK	Shutdown by Microprocessor (Manual-reset)
	WEIGHT	Net 92kg(Gross: 99kg)
	PACKAGE	Carton 671(W) × 820(D) × 971mm(H)
	ACCESSORIES	Mounting Bracket, Installation Kit
	OPERATING CONDITIONS	Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
	*We reserve the right prior notice. 1. Install the ice make on location, water s	We reserve the right to make changes in specifications and design without notice.  In strall the ice maker properly in accordance with the instructions or nocation, water supplyfrain connections and electrical
	connections stated provided.  2. The ice production	connections stated in the instruction and installation manuals provided.  The ice production depends on the ambient and water
	temperatures. Refe 3. Product Code: F08	temperatures. Refer to the instruction manual. Product Code: F087-C106

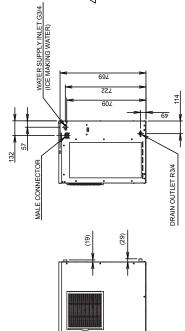


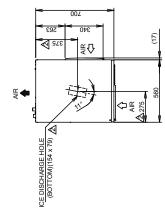


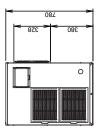


# [m]FM-480AKE-HCN (Auxiliary code: D-1 to K-1)

	ПЕМ	HOSHIZAKI NUGGET ICE MAKER
	MODEL	FM-480AKE-HCN
	POWER SUPPLY	1 Phase 220V-240V 50Hz Capacity: 2.2kVA (8.8A)
	AMPERAGE	5.6A Starting: 27A
	ELECTRIC CONSUMPTION	1170W (Power Factor: 90.7%)
	ICE PRODUCTION PER 24h	Approx.380kg (Ambient Temp. 10°C, Water Temp. 10°C) Approx.330kg (Ambient Temp. 21°C, Water Temp. 15°C) Approx.270kg (Ambient Temp. 32°C, Water Temp. 21°C)
	SHAPE OF ICE	Nugget
	MAX. STORAGE CAPACITY	Not Applicable
	WATER CONSUMPTION PER 24h	Approx.0.380m² (Ambient Temp. 10°C, Water Temp. 10°C, Water Temp. 10°C) Water Temp. 10°C) Water Temp. 15°C) Water Temp. 32°C, Water Temp. 21°C, Water Temp. 21°C, Water Temp. 21°C)
	OUTSIDE DIMENSIONS	560(W) × 700(D) × 780mm(H)
	HEAT REJECTION	2190W(Ambient temp. 32°C, Water temp. 21°C)
	CABINET	Stainless Steel, Galvanized Steel (Rear)
	ICE MAKING SYSTEM	Thin ice forming inside Cylinder (Nugget Ice)
	WATER SUPPLY SYSTEM	Direct Connection to Water Main, Inlet: G3/4 (Rear)
	DRAIN SYSTEM	Outlet: R3/4 (Rear)
	COMPRESSOR	Hermetic
	CONDENSER	Spiral Tube Type, Air-cooled
	EVAPORATOR	Tube coiled around Cylinder (Solder Plated)
	REFRIGERANI BIN CONTROL	R290 Actuator and Reed Switch (Time delay controlled)
	ICEMAKING WATER CONTROL	Float Switch and Solenoid Valve
	ELECTRICAL CIRCUIT PROTECTION	Circuit Breaker, Earth Wire
	REFRIGERANT CIRCUIT PROTECTION	Compressor Internal Thermostat (Auto-reset), Pressure Switch (Auto-reset)
	MECHANISM PROTECTION	Microswitch (Manual-reset)
	INTERLOCK	Shutdown by Microprocessor (Manual-reset)
-≪	PACKAGE	Carton 665(W) × 820(D) × 950mm(H)
1	ACCESSORIES	Mounting Bracket, Installation Kit
	OPERATING CONDITIONS	Ambient Temp.: 5-40°C, Water Supply Temp.: 5-35°C Water Supply Pressure: 0.05-0.8MPa (0.5-8bar) Voltage Range: Rated Voltage±6%
_	*We reserve the right I	"We reserve the right to make changes in specifications and design without
	1 Install the ice make	prior rouce: 1 Install the ice maker properly in accordance with the

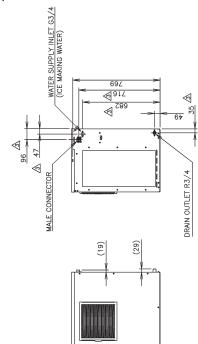


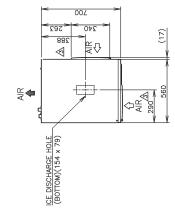


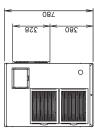


# [n] FM-480AKE-HCN (Auxiliary code: K-2 or later)

PER E E E E E E E E E E E E E E E E E E	50H2
POWER SUPPLY 1PHASE 220-240X AMPERAGE Running: 5.64 Rated Starting: 27A Rated Starting: 27A Rated Starting: 27A Rated Starting: 27A PAPER 220-240X EIGTRCONSUMPTION 1700V (AT. 1700V (AT. 2700) (AT. 2	50H2
AMPERAGE Running: 5.6A Rated Starting: 27A Starting: 27A Starting: 27A Starting: 27A Starting: 27A Per	4)
TELETRE CONSUMPTION 1170W (Power Froe PRODUCTION Approx. 33049 (AT. 2 PER 24h Approx. 33049 (AT. 3 SHAPE 04 IC NUGGET NUG	Motor: 5.6A
REPRODUCTION APPROX. 238049 (AT. 2 APPROX. 23049 (AT. 2 APPROX. 27049 (AT. 2 APPROX. 27049 (AT. 2 APPROX. 27049 (AT. 2 APPROX. 27049 (AT. 2 APPROX. 27040 (AT. 2 APPROX. 0.350m² (AT. 1 APPROX. 0.350m² (AT. 2 APPROX. 0.350m² (AT. 2 APPROX. 0.350m² (AT. 3	10.1
SHAPE OF ICE Nugget Nugget WX. SIRWE CORE Nugget Nugget WX. SIRWE CORE Nugget Not Applicable WINE CORE Nugget State 1.  MAER CORE STATE ST	10c, WT. 10°C) 21c, WT. 15°C)
WAX. STORAGE CHROSTITE  WATER COANSOMPTION  WERE CANSOMPTION  Approx. 0.350m² (AT.  Approx. 0.350m² (AT.  Approx. 0.350m² (AT.  Approx. 0.350m² (AT.  ADDISCE DARCHINGON S. 560(W) x 700(D)  HEAT REJECTION 1 2190W (AT.32°.)  HEAT REJECTION 1 Urethane Foam  INSULATION 2 Urethane Foam  INSULATION 1 Urethane Foam  INSULATION 1 Urethane Foam  INSULATION 1 Urethane Foam  INSULATION 1 Urethane Type.  EVAPORATOR 1 Ure coiled around  REFRICERANT RE290/145g  BIN CONITROL Actuator and Reed Six  WEIGHT CONITROL Actuator and Reed Six  INSULATION MIcroswitch (Mar Campressor Internal Tre  RECIRCE CINCUIT PRESSOR FOR SIX IN CONTROL  INSULATION MICROS 999(Gross 999(Gr	20, WI. 21 U)
WIRE CONSUMPTION APPROX.0.3300m² (AT. PER 24h APPROX.0.3200m² (AT. APPROX.0.320m² (AT.	
PER 24h  Approx.0.230m (AL.  UISDE DMENSONS  560(W) x 700(D) HEAT REJECTION  2190W (AT.325.) CABINET  Stainless Steel, G INSULATION  Urethane Foam INSULATION  Untert Sylv 1459  EAPPORATIOR  To Atuator and Reed Sylv INSULATION  WEIGHT  STREETING  OPTICAL CARLON  WEIGHT  PROTECTION  WEIGHT  PROTECTION  WEIGHT  PROTECTION  WEIGHT  PROTECTION  WEIGHT  PROTECTION  WEIGHT  OPTICAGE  Ambient Temp: 5 - 40  CONDITIONS  Voltage Range: Retere  Ambient temp: 5 - 40  CONDITIONS  Voltage Range: Retere  Ambient temp: 5 - 40  CONDITIONS  Voltage Range: Retere  Ambient temp: 5 - 40  CONDITIONS  Unistal the instruction and installation  Lin ice prodection  Connections and electrical counter installation  The instruction and installation  Connections and electrical counter  The instruction and installation  Lin ice prodection  Water temperatures. Refer to	10°C, WT. 10°C)
UNISUE DIMENSIONS  DUTSUE DIMENSIONS  EACH FELECTION  Stainless Steel, GABINE  INCULATION  Urethane Foam  INSULATION  INCULATION  INCOLORING  IN	(AT. 32¢, WT. 21°C)
HEAI REJECTION 2190W (AT.322.) CABINET Stainless Steel, GINSULATION Urethane Foam INSULATION FOAM HEC—free BLOWING AGENT Thin ice forming ins MIRB SIRPLYSTEIN Direct Commettion to MORAN SYSTEM Outlett. R3/4 (Re COMPRESSOR Hermetic COMPRESSOR Hermetic CONDENSER Spiral Tube Type, EVAPORATOR Tube coiled around REFRICERANT R290/1459 BIN CONTROL Actuator and Reed SM ELECTRIC CIONIFOL Actuator and Reed SM ELECTRIC CIONIFOL Actuator and Reed SM ELECTRIC CIONIFOL Actuator and Propercion PROJECTION MICROSYMICH (Aur EXPANSIVE SUPPLY PROJECTION MICROSYMICH CARACTER SCHUTCH SUPPLY PRESENT SPECTION SOURCE CARDON PROSECTION OUTLING SUPPLY PRESENT STATUS TO THE INSTAIL THE	× 780mm(H)
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Microswitch (Mar Sewitch (Mar Sewitch (Mar Sewitch Sew	-reset)
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connections and elementhe instruction and The ice production water temperatures	in accordance with vater supply/drain
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	to the instruction
3. Product Code: F087-C106	

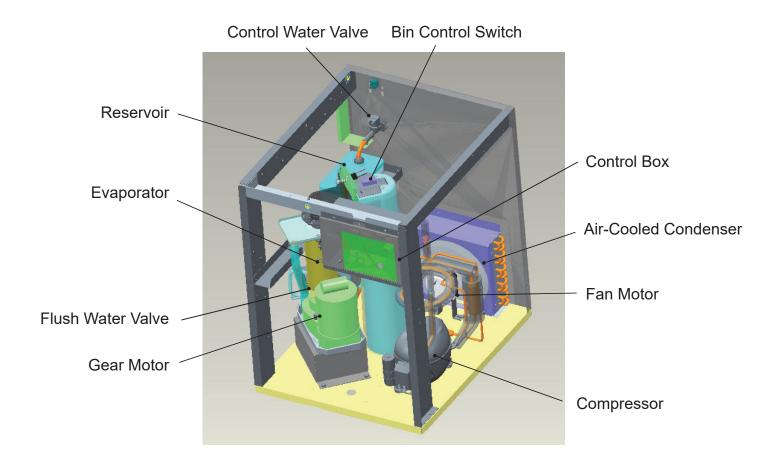




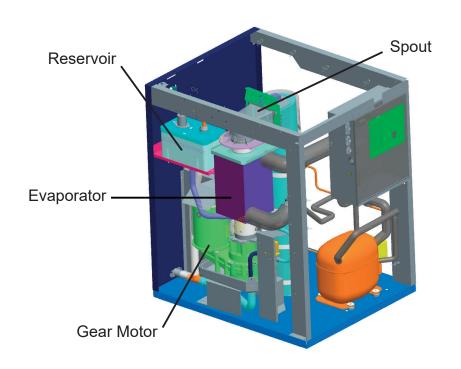


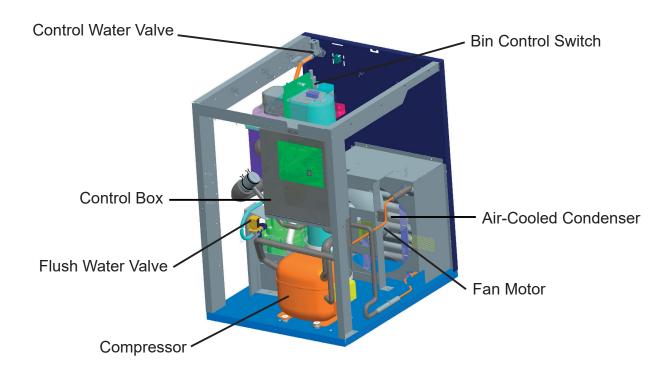
### 2. CONSTRUCTION

### [a] FM-150AKE-HC(N)-SB

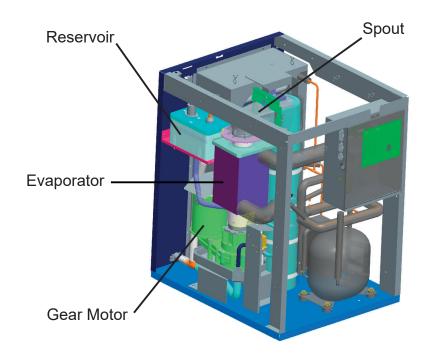


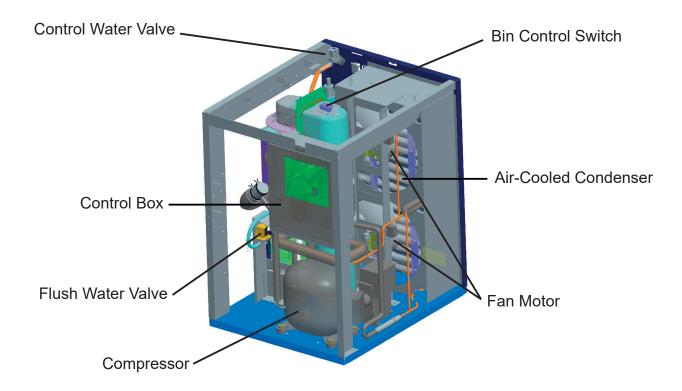
# [b] FM-300AKE-HC(N) (Auxiliary code: D-0 or earlier)





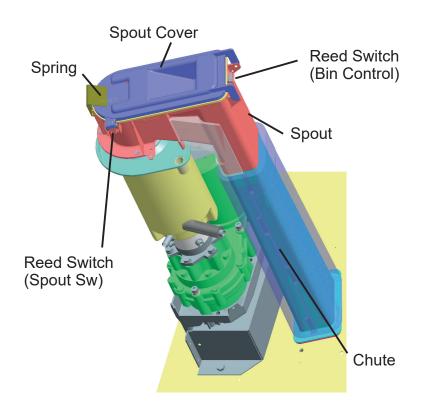
# [c] FM-480AKE-HC(N) (Auxiliary code: D-0 or earlier)

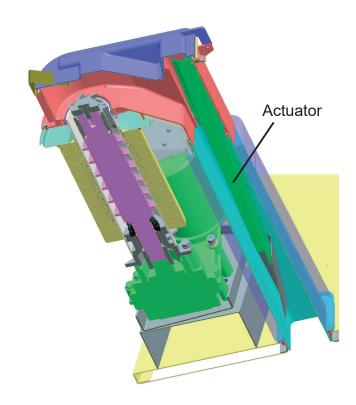




# [d] FM-300AKE-HC(N), FM-480AKE-HC(N) (Auxiliary code: D-1 or later)

See [b] or [c] for the entire construction.





#### II. MAINTENANCE AND CLEANING INSTRUCTIONS

#### - IMPORTANT -

- 1. This icemaker must be maintained individually, referring to the instruction manual and labels provided with the icemaker.
- 2. To achieve optimum icemaker performance, the following parts need periodic inspection and maintenance:

Extruding head (upper bearing)

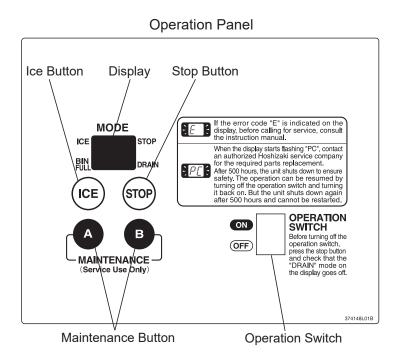
Housing (lower bearing)

Mechanical seal

These parts should be inspected after two years from installation or 10,000 hours of operation, whichever comes first, and once a year thereafter. Their service life, however, depends on water quality and environment. More frequent inspection and maintenance are recommended in bad or severe water conditions.

#### 1. PERIODIC PARTS REPLACEMENT

The extruding head (upper bearing) and mechanical seal must be replaced after four years from installation or 20,000 hours of operation, whichever comes first.



When the total operating time reaches 20,000 hours, the display flashes "PC". Then, after 500 hours, the unit shuts down to ensure safety. The operation can be resumed by turning off the operation switch and turning it back on. But the unit shuts down again after 500 hours and cannot be restarted.

This information is provided on the label attached to the front panel and in the instruction manual. But instruct the user to contact a Hoshizaki service agent for replacement as soon as the display starts flashing "PC".

After replacing the extruding head and mechanical seal:

- 1) Reset the compressor operating hours in accordance with "III. 5. [f] RESETTING COMPRESSOR OPERATING HOURS". The "PC" indication on the display goes off.
- 2) Record the date of replacement on the label attached to the front panel.

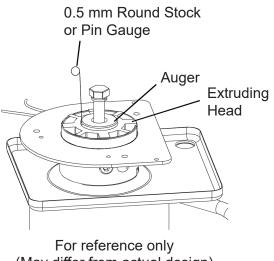
Operating Hours	"PC" Indication
0 to 20,000 hours	None
20,000 to 20,500 hours	"PC" > "ICE" > "PC" > "ICE" > "PC" > "ICE" > "PC" >
	* Flashes every second.
20,500 to 21,000 hours	"PC" > "PC" > "ICE" > "PC" > "ICE" > "PC" >
	* Flashes every second.
	Replace the parts as soon as possible.

### 2. EXTRUDING HEAD (UPPER BEARING), HOUSING (LOWER BEARING)

These parts should be replaced if a diametrical gap of more than 0.5 mm is found when at least three spots are checked by changing the direction of the auger on each bearing.

It depends on the water quality and conditions, but normally the bearings should be checked for wear after a total of 8,000 - 10,000 hour operation from installation date.

Note: The clearance between the auger blades and the evaporator interior is 0.4 - 0.5 mm. If the bearings and rotating parts are worn out to create a larger clearance, the evaporator interior may be damaged. (The diameters differ by 0.8 - 1.0 mm.)



(May differ from actual design)

If the auger surfaces against which the bearings contact are no longer smooth or show any burrs or abrasions during the above inspection, replace the auger. The sealing bolt must be tightened equally to torque of 784N·cm±10%.

#### 3. MECHANICAL SEAL

The mechanical seal prevents water leaks from between the auger and the housing bearing and gradually wears out to reduce its watertightness. Check the amount of water leakage from the drain pipe located at the side of the gear case to determine the necessity of replacement.

Total operation time	<u>Water leakage</u>
3,000 hours	0.1 mL/h
10,000 hours	0.5 mL/h

Attach the mechanical seal with its floating sheet facing the housing. After replacement, there should be no water leakage from the mating surface.

Note: The water leakage will exceed the above amount with scale/dirt build up or damage on the mating surface. Replace the mechanical seal when the water leakage exceeds 0.5 mL/h.

#### 4. GEAR MOTOR

After the following hours of operation, check the gear motor for excessive noise caused by increased torque or deterioration of mechanical parts.

Bearing, gear and other mechanical parts: 10,000 hours Oil seal: 5 years

Note: When the output shaft oil seal is exposed to a large amour

Note: When the output shaft oil seal is exposed to a large amount of water at one time, water may enter the gear case. Always drain the water circuit before removing the auger for service.

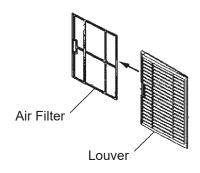
#### 5. CONDENSER

Check the condenser once a year, and clean if required by using a brush or vacuum cleaner. More frequent cleaning may be required depending on the location of the icemaker.

#### 6. AIR FILTER

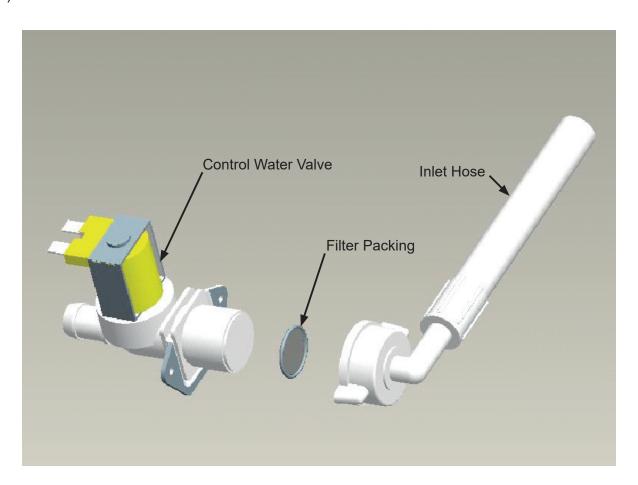
Plastic mesh air filters remove dirt or dust from the air, and keep the condenser from getting clogged. If the filters get clogged, the icemaker's performance will be reduced. Remove and clean the air filters at least twice per month:

- 1) Slide the air filter off the louver.
- 2) Clean the air filter by using a vacuum cleaner. When severely clogged, use warm water and a neutral cleaner to wash the air filter.
- 3) Rinse and dry the air filter thoroughly, and place it in position.



#### 7. CONTROL WATER VALVE

- 1) Disconnect the power source.
- 2) Close the water supply tap.
- 3) Disconnect the inlet hose from the water valve.
- 4) Clean the filter packing using a brush.
- 5) Replace the filter packing and inlet hose in their correct positions.
- 6) Open the water supply tap.
- 7) Connect the power source.
- 8) Check for leaks.



#### 8. CLEANING OF WATER SYSTEM

#### · WARNING -

- 1. HOSHIZAKI recommends cleaning this unit at least twice a year. More frequent cleaning, however, may be required in some existing water conditions.
- 2. Do not touch the operation switch with damp hands.
- 3. Always wear rubber gloves, eye protectors, apron, etc. for safe handling of the cleaner and sanitiser.
- 4. Use the cleaners and sanitisers recommended by Hoshizaki. Contact your local Hoshizaki office for further details. (The instructions below give an example of those recommended cleaners and sanitisers.)
- 5. Never mix cleaning and sanitising solutions in an attempt to shorten cleaning time.
- 6. Wipe off any splashed or spilt cleaner/sanitiser immediately.
- 7. Do not use any ammonia type cleaners on any part of the icemaker.

#### - CAUTION -

Do not use ice produced with cleaning and sanitizing solutions. Be sure none remains in the storage bin on completion of cleaning.

#### <STEP 1>

Dilute the solutions with water as follows:

Cleaning solution: "Nickel-Safe Ice Machine Cleaner" by The Rectorseal Corporation

or similar. Prepare approximately 3 L of solution as directed on the

container.

Sanitising solution: 30 mL of 5.25% sodium hypochlorite with 7.6 L of water or the

Hoshizaki recommended sanitiser as directed on the container.

#### — IMPORTANT —

For safety and maximum effectiveness, use the solutions immediately after dilution.

#### <STEP 2>

Use the cleaning solution to remove lime deposits in the water system.

- 1) Open the plastic access flap on the front panel.
- 2) Press the stop button to activate the flush cycle (approx. 10 minutes).

- 3) Remove all ice from the storage bin to avoid contamination by the cleaner.
- 4) Unplug the icemaker. Remove the top and front panels.
- 5) Remove the cover of the reservoir. Remove any loose debris or scale.
- 6) Carefully fill the reservoir with the solution to the overflow point. If necessary, use a small brush to clean the inside of the reservoir.
- 7) Refit the reservoir cover.
- 8) Check that the operation switch is in the "ON" position.
- 9) Refit the front and top panels.
- 10) Allow the icemaker to stand for about 10 minutes, then plug in the icemaker to make ice with the solution.
- 11) With the water supply tap open, allow the machine to continue icemaking for a further 20 minutes. Open the access flap and press the stop button.
- 12) Allow time for the gear motor to stop and the water system to drain.
- 13) Allow the icemaker to make ice for approximately 10 minutes.
- 14) Pour warm water into the storage bin to melt any ice down the drain.
- Note: 1. If the machine has heavy deposits of scale, repeat the complete cleaning procedure.
  - 2. Do not increase the proportion of cleaning solution to shorten cleaning times, as this may lock the auger when completing item 10).

#### **<STEP 3>**

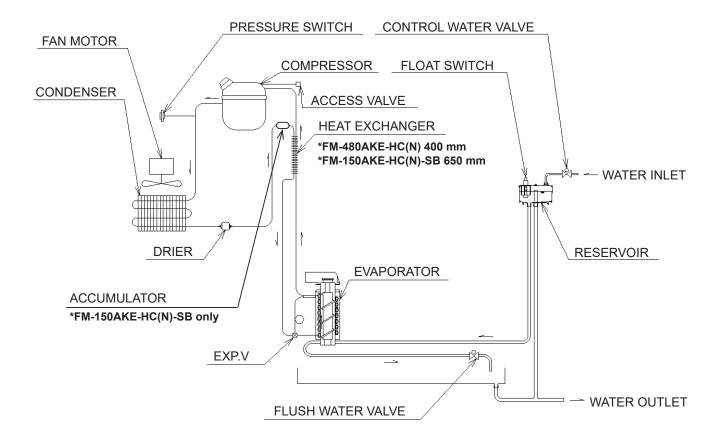
Note: Sanitising should always be completed after cleaning or alternately as an individual procedure if conditions exist to make it necessary.

Use 2.8 litres of the sanitising solution to sanitise the icemaker.

15) Follow items 1) to 14) to complete sanitisation of the water system.

#### **III. TECHNICAL INFORMATION**

### 1. WATER CIRCUIT AND REFRIGERANT CIRCUIT

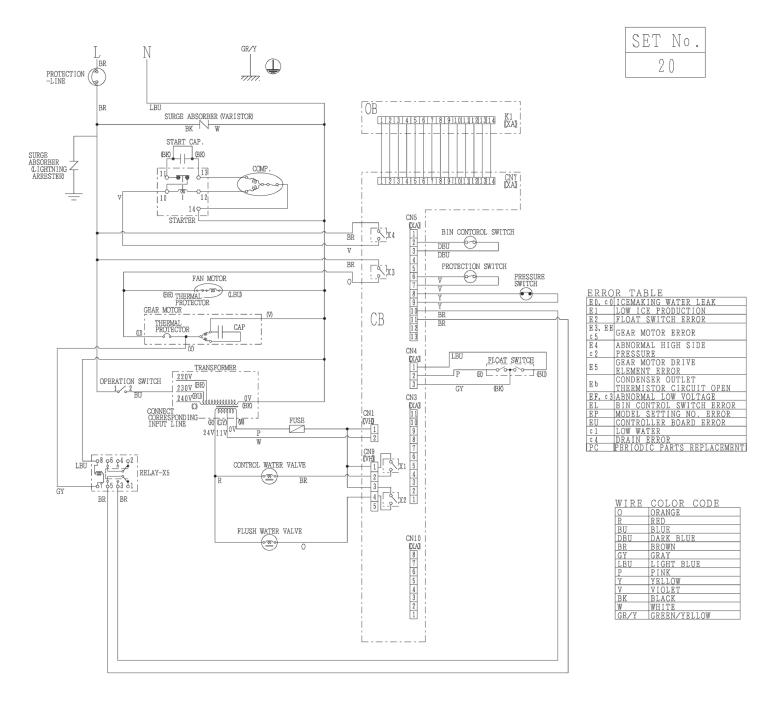


Pressure Switch Cut-out 2.26 + 0.15/0 MPa Cut-in 1.57 ± 0.15 MPa

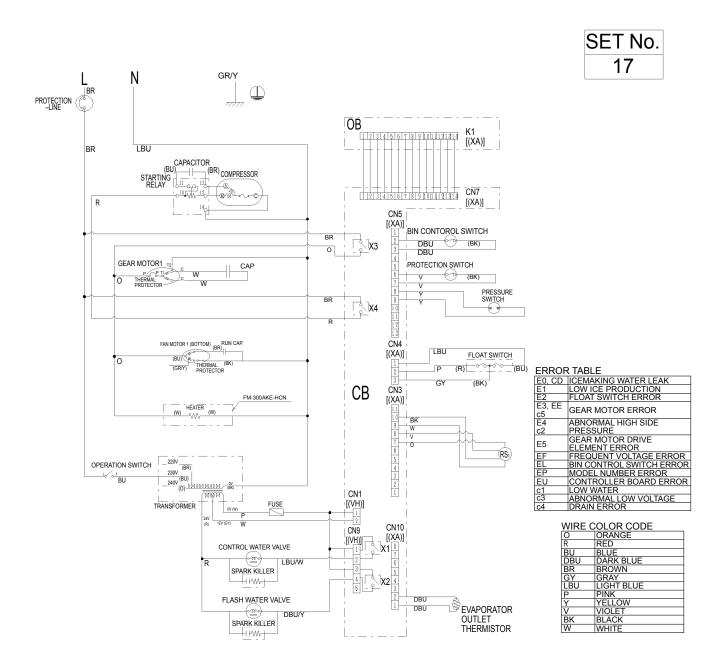
#### 2. WIRING DIAGRAM

#### [a] WIRING DIAGRAM

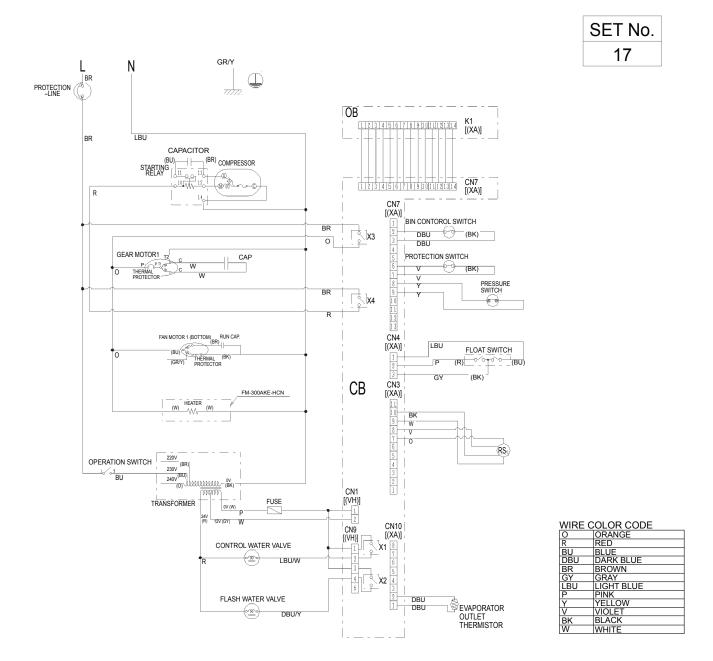
#### FM-150AKE-HC(N)-SB



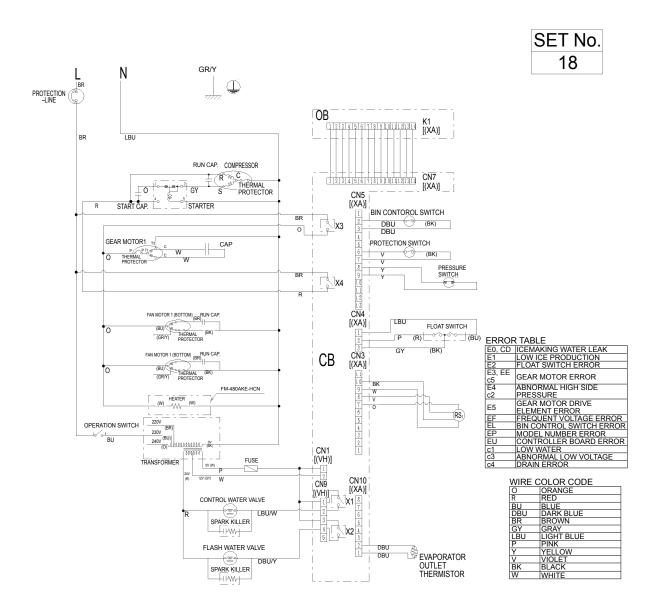
### FM-300AKE-HC(N) (Auxiliary code: D-0 or earlier)



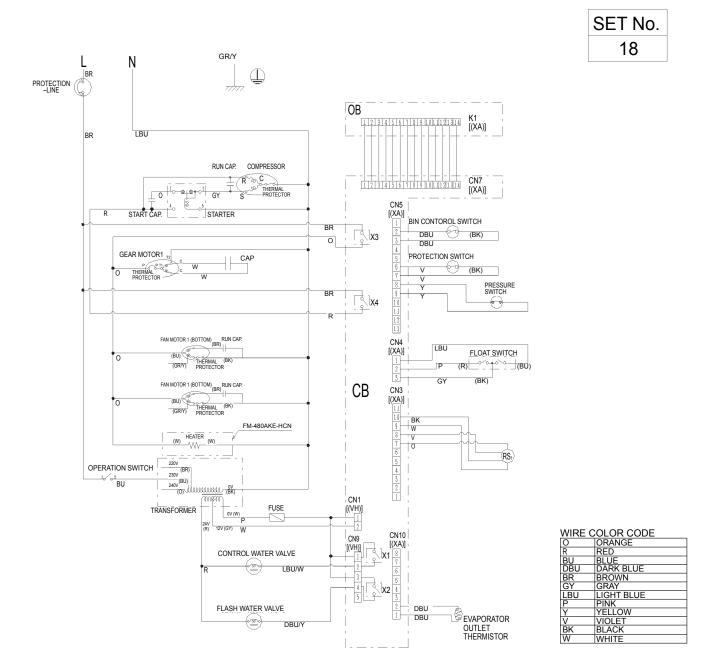
### FM-300AKE-HC(N) (Auxiliary code: D-1 or later)



### FM-480AKE-HC(N) (Auxiliary code: D-0 or earlier)

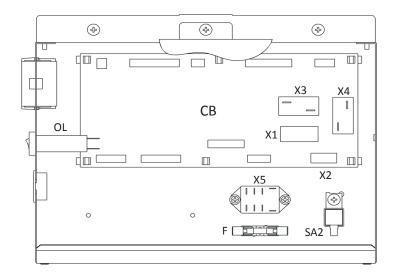


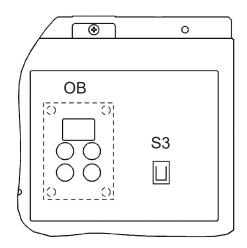
### FM-480AKE-HC(N) (Auxiliary code: D-1 or later)



# [b] CONTROL BOX LAYOUT

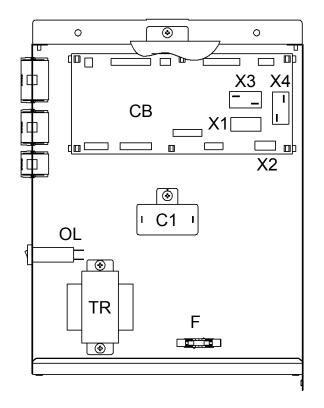
# FM-150AKE-HC(N)-SB

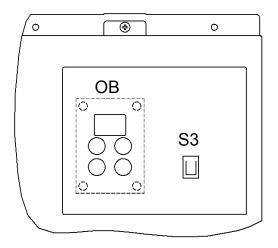




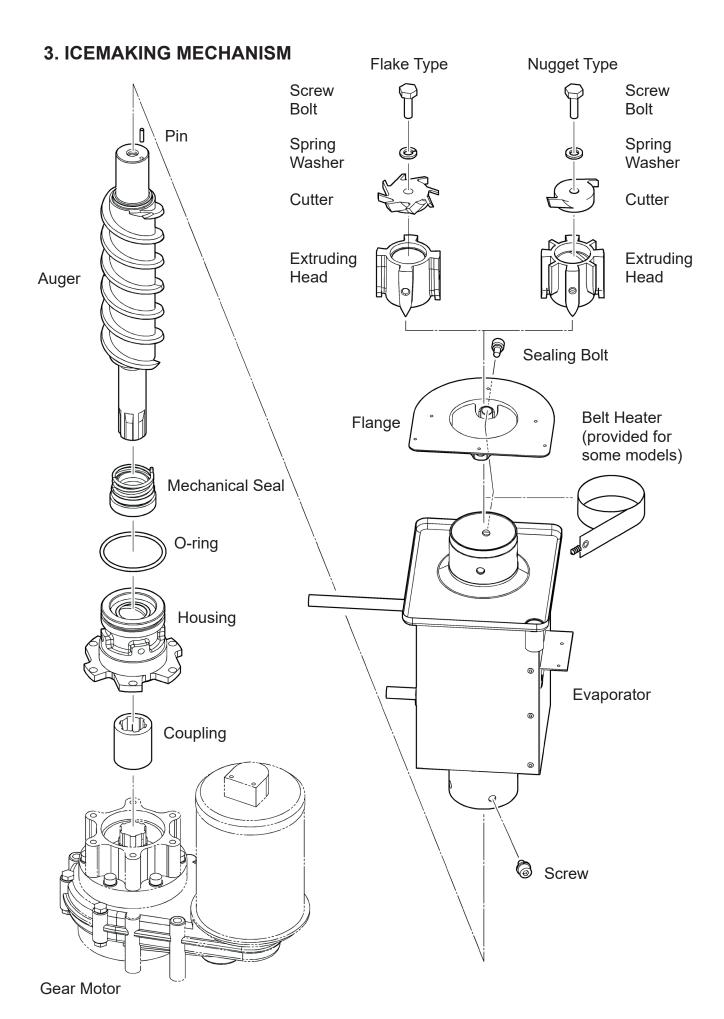
СВ	CONTROLLER BOARD-MAIN
ОВ	CONTROLLER BOARD-OPERATION
X1	POWER RELAY (CONTROL WATER VALVE, ON BOARD)
X2	POWER RELAY (FLUSH WATER VALVE, ON BOARD)
Х3	POWER RELAY (GEAR MOTOR, ON BOARD)
X4	POWER RELAY (COMPRESSOR, ON BOARD)
X5	POWER RELAY (GM DRIVE)
S3	OPERATION SWITCH
OL	CIRCUIT PROTECTOR (10A)
SA2	SURGE ABSORBER (LIGHTENING ARRESTER)
F	FUSE 3.15A

# FM-300AKE-HC(N), FM-480AKE-HC(N)





СВ	CONTROLLER BOARD-MAIN
OB	CONTROLLER BOARD-OPERATION
X1	POWER RELAY (CONTROL WATER VALVE, ON BOARD)
X2	POWER RELAY (FLUSH WATER VALVE, ON BOARD)
Х3	POWER RELAY (GEAR MOTOR, ON BOARD)
X4	POWER RELAY (COMPRESSOR, ON BOARD)
S3	OPERATION SWITCH
OL	CIRCUIT PROTECTOR (10A: 300AKE-HC / 20A: 480AKE-HC)
C1	CAPACITOR (GM1)
F	FUSE 3.15A
TR	TRANSFORMER



#### [a] EVAPORATOR (CASING)

The evaporator consists of a stainless steel icemaking cylinder coiled with a refrigeration pipe and wrapped together with a polyurethane foam insulation material. Water coming from the inlet into the evaporator will be frozen into ice. The ice spout is located on top of the evaporator.

#### [b] AUGER

The stainless steel auger is supported by the upper and lower bearings of the evaporator and slowly rotated by the gear motor, while scraping off the ice forming on the inner wall of the cylinder and pushing up to the ice spout.

#### [c] EXTRUDING HEAD (BEARING)

The stainless steel extruding head is provided with a press-fit plastic bearing inside and fixed on top of the evaporator. The extruding head functions as the auger bearing and compresses the sherbet ice carried up by the auger into a column shape with the path resistance.

#### [d] HOUSING

The cast bronze housing is provided with a press-fit plastic bearing inside and fixed on the bottom of the evaporator for connection with the gear motor.

#### [e] MECHANICAL SEAL

The mechanical seal on the lower auger bearing prevents icemaking water leaks into the evaporator. The mating surfaces are made of ceramic and carbon.

#### [f] COUPLING (SPLINE JOINT)

The auger bottom and gear motor output shaft are splined and connected with the spline joint.

#### [g] GEAR MOTOR

The gear motor consists of a 200W 1 phase 240V or 80W 1 phase 220 - 240 / 220V drive motor integrated with a decelerator and provided with a built-in auto-reset thermal protector. When the thermal protector trips, the controller board will stop the gear motor. The thermal protector trips when the gear motor mechanism is overloaded or when excessively high or low voltage is applied on the gear motor. The electrical capacity must be increased if a large current flows through the surrounding equipment.

#### [h] BELT HEATER (provided on some models)

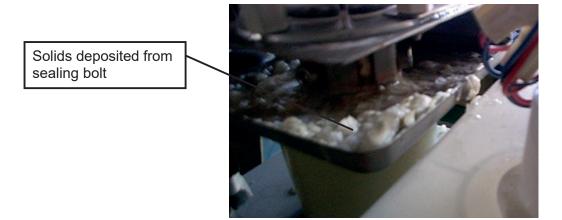
The belt heater is provided to reduce the load of ice passing the extruding head during a freeze cycle and to prevent vapor lock during a flush cycle.

#### [i] REMOVABLE FLANGE

The flange used to be welded on the evaporator to fix the spout. But sometimes the extruding head applies excessive load on the evaporator to compress ice, resulting in breaking the welded joints. To avoid the load, the flange has been changed to a separate part to be secured together with the extruding head by using sealing bolts.

#### [j] SEALING BOLT

Sometimes the icemaking operation may produce white solids on the drip pan. They are deposits of silica and calcium contents in the icemaking water leaking from the sealing bolt. The bolt is provided with retaining and sealing functions, which may be reduced by the load and vibration during a freeze cycle. Do not reuse a removed sealing bolt.

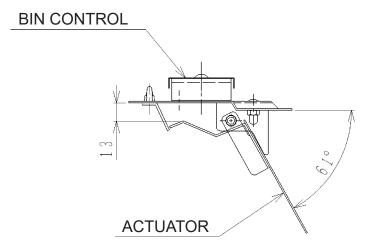


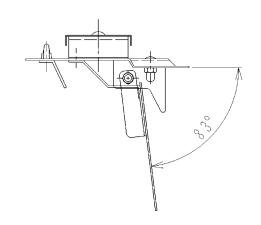
#### [k] BIN CONTROL SWITCH [FM-150][FM-300/480 (Auxiliary code: D-0 or earlier)]

The bin control switch is composed of a proximity switch and actuator. When the chute fills up, ice will push up the actuator on top of the chute to switch off the proximity switch. After 7 seconds, the controller board will stop the gear motor and compressor at the same time. When ice is used, the actuator will return to the original position to switch on the proximity switch. The gear motor will restart in 7 seconds, and the compressor in 5 minutes.

When the bin control switch seems to have malfunctioned, check the dimensions of the actuator as well as the operation of the proximity switch. Also, if the chute switch or the gear motor circuit protector has operated for some unidentified reason, be sure to check the actuator for proper dimensions.

- 1) Remove the bin control switch from the chute.
- 2) Move the actuator to the maximum operation angle as shown (top). Check that the actuator is about 13 mm away from the barrier. If not, replace the whole bin control switch assembly.





#### [I] BIN CONTROL SWITCH [FM-300/480 (Auxiliary code: D-1 or later)]

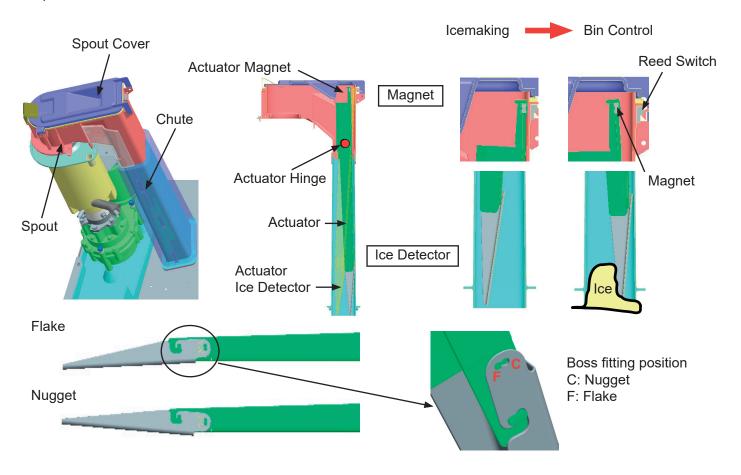
The bin control switch is composed of a reed switch attached to the spout and an actuator (ice detector) provided inside the spout and chute.

The bin control switch operates as follows:

- 1. Ice reaches up to the ice detector.
- 2. Ice pushes and moves the ice detector.
- 3. The actuator magnet shifts and departs from the reed switch
- 4. The reed switch turns off.
- 5. The icemaking operation stops.

Heavy soil inside the spout or chute may cause ice to get stuck. Dirty actuator hinge may disturb the movement of actuator. Check the cleanness of spout, chute, and actuator at periodic inspection or periodic part replacement. Wipe clean any notably dirty part.

The ice detector is different for flake icemaker and nugget icemaker. If incorrect detector is attached, the bin control function will not work. If the icemaking operation continues, the abnormal stop switch trips and the unit stops with an error. Be sure to attach the proper ice detector. The actuator is composed of two components bonded. The letters "C" and "F" are stamped on the fitting part. The type of icemaker can be distinguished by boss fitting position.

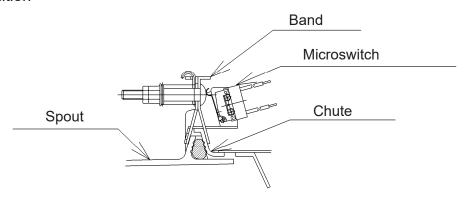


#### [m] CHUTE SWITCH [FM-150][FM-300/480 (Auxiliary code: D-0 or earlier)]

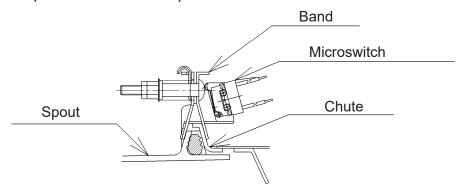
The chute switch consists of a microswitch and a band securing the spout and chute. When the bin control switch breaks down, the band opens and presses the button on the microswitch (contacts open) to stop the icemaker (error code: EL).

To restart the icemaker, remove ice from the spout and chute, and move the operation switch to the "STOP" position, then to the "RUN" position.

#### **Normal Condition**



# Abnormal Condition (Band moves and presses microswitch)



# [n] SPOUT, SPOUT COVER [FM-300/480 (Auxiliary code: D-1 or later)] Spout Cover The spout and spout cover are connected to the evaporator casing with a removable flange. These are the passage to deliver ice formed inside the evaporator casing into the chute. The spout is provided with a reed switch, ant the spout cover with a magnet. If the bin control switch goes wrong and fails to stop icemaking operation with the bin full, ice pushes up the spout cover, and the magnet gets away from the reed switch to stop the unit.

#### 4. ELECTRIC CIRCUIT

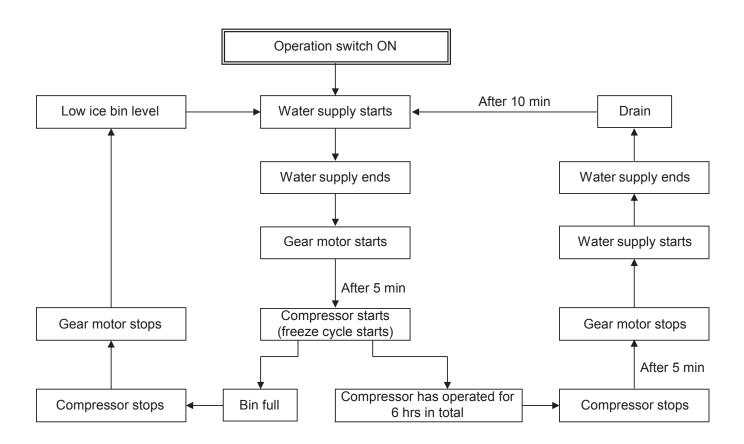
#### **CAUTION**

Reassemble all the components as they were after servicing the unit according to a service call.

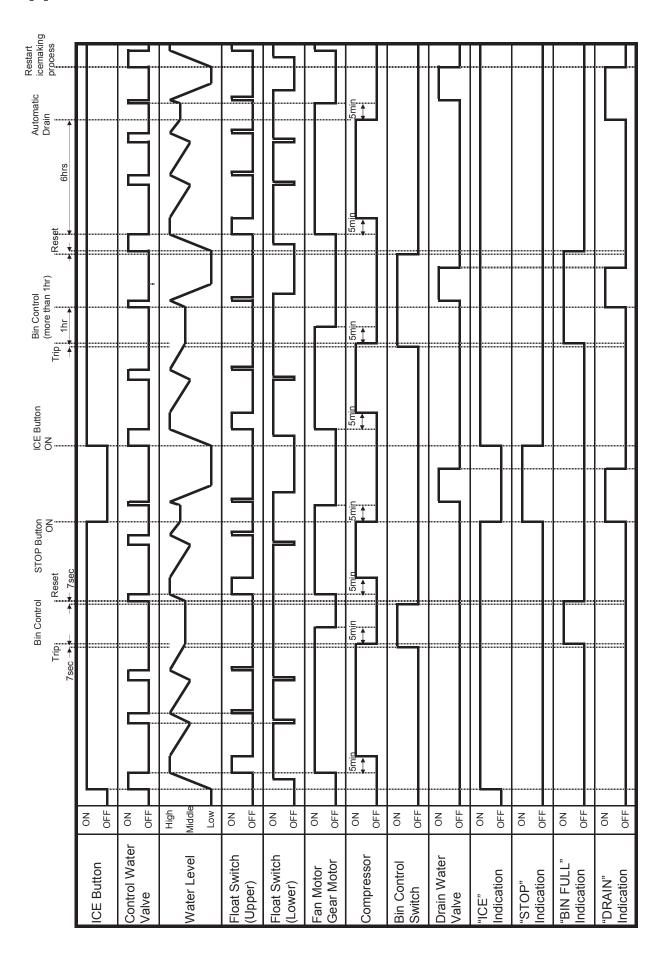
#### [a] BASIC OPERATION

The icemaker starts water supply when the operation switch is moved to the "ON" position. On completion of water supply, the gear motor starts immediately. After 5 minutes the compressor starts to begin icemaking operation.

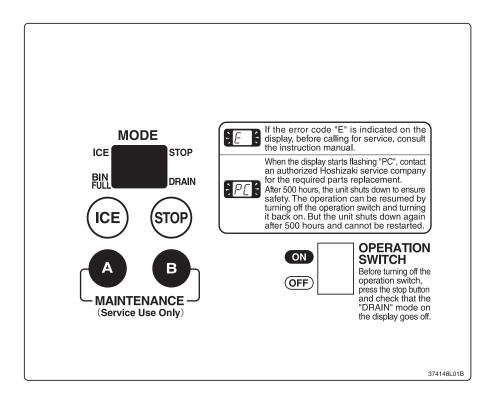
In normal operation, the icemaker shuts down when the storage bin fills up to trip the bin control switch or the stop button is pressed. When the compressor operates for 6 hours in total and continuously for more than 10 minutes, the icemaker supplies water until the reservoir fills up and starts a drain cycle. After 10 minutes the icemaker automatically starts water supply and resumes icemaking operation.



# [b] TIMING CHART



#### 5. OPERATION BOARD



#### [a] OPERATION BUTTONS

<u>ICE</u> = When pressed in the STOP mode, the unit is supplied with water and starts icemaking operation.

STOP = When pressed in the ICE mode, the unit stops icemaking operation and drains.

MAINTENANCE A = Used for various maintenance operations.

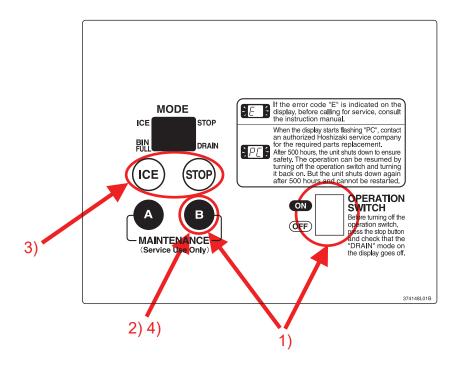
MAINTENANCE B = Used for model code setting.

<u>OPERATION SWITCH</u> = Power supply for the icemaker. Move it to the "OFF" position to shut down the unit for a long time.

#### [b] SETTING MODEL NUMBER

The model number must be set at the time of replacement of the controller board. Check the model number specified on the wiring label. Improper setting may result in failure or inoperability.

- 1) Press and hold the maintenance B button, and move the operation switch to the "ON" position.
- 2) When the display shows "99", release the maintenance B button.
- 3) Press the stop button to increase the number, or press the ice button to decrease the number until it matches the model number on the wiring label.
- 4) Press the maintenance B button to complete the setting and start icemaking operation in the ice mode.
- 5) To check the model number, see next page.



# [c] DISPLAYING COMPRESSOR OPERATING HOURS, CYCLE TIME, MODEL NUMBER AND SOFTWARE VERSION

Press and hold the maintenance A button, and press the ice button. The display shows the following items one by one every time the ice button is pressed. This function is available in the ice or stop mode.

```
Press and hold MAINTENANCE A

Compressor operating hours on display ------ a)

Press ICE

Cycle time on display ------ b)

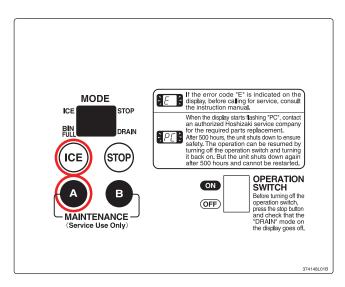
Press ICE

Model number on display ----- c)

Press ICE

Software version on display ----- d)

Release MAINTENANCE A
```



#### Note:

- 1. The display shows the next item if the ice button is pressed before one item appears in the display.
- 2. The display mode is cancelled if the maintenance A button is released.
- 3. The software version is displayed repeatedly while the maintenance A button is pressed. Release the maintenance A button to cancel the display mode.

#### a) Compressor Operating Hours

The display shows the compressor operating hours in six digits divided into three parts (2 digits for 2 seconds each time).

Then, "- -" appears in the display (to show the end of the compressor operating hours display mode).

e.g. 3527 hours = "00", "35", "27", "--"

#### b) Cycle Time

The display shows the cycle time in four digits divided into two parts (first minutes then seconds, for 2 seconds each time) from the latest record (5 records at maximum).

Then, "--" appears in the display (to show the end of the cycle time display mode). If no cycle time is recorded, the display shows "--" only.

Minutes are indicated as follows:

0 0 to 9 = 0 to 9 minutes

A 0 to 9 = 10 to 19 minutes

0 = 20 to 29 minutes

D-0 to 9 = 30 to 39 minutes

d 0 to 9 = 40 to 49 minutes

E 0 to 9 = 50 to 59 minutes

Seconds are indicated as 0 to 5 0 to 9.

e.g. o9 48 = 9 minutes 48 seconds b7 36 = 27 minutes 36 seconds

By using the freeze cycle time, **approximate ice production capacity** can be calculated.

Series	Approximate ice production capacity (kg/d)
FM-150	
FM-300	60,000 / cycle time (sec)
FM-480	

This is just an approximate capacity. The actual capacity depends on ambient temperature, water temperature, voltage and frequency.

For accurate measurement, use a container to receive ice actually produced for 10 minutes, measure its weight, and calculate ice production per day. Repeat this three times to figure out the average.

#### c) Model Number

The display shows two digits. e.g. FM-480AKE-HC(N) = "18"

#### d) Software Version

The display shows the software version in six digits/symbols divided into three parts. e.g. Ver. 9-3-6 = "09", "-3", "-6"

The indication is repeated until the maintenance A button is released.

#### [d] DISPLAYING ERROR LOG

Press and hold the maintenance A button, and press the stop button. The display shows the following items one by one every time the stop button is pressed. This function is available in the ice or stop mode.

Press and hold MAINTENANCE A

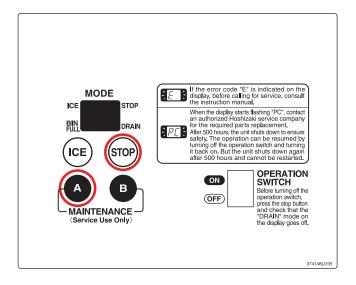
Compressor operating hours on display ------ [c] a)
Press STOP

Error log on display (8 records at maximum)
Press STOP

"- -" on display (end of error log display mode)
Press STOP

Ongoing error on display

Release MAINTENANCE A

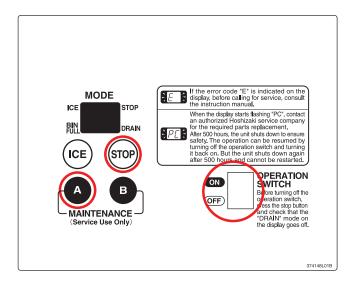


#### Note:

1. The display does not show the ongoing error even if the stop button is pressed while the error log is in the display. To display the ongoing error, press the stop button while "--" is in the display to show the end of the error log display mode.

#### [e] RESETTING ERROR LOG

With the operation switch in the "OFF" position, press and hold the stop and maintenance A buttons. Move the operation switch to the "ON" position. Release the buttons when the display shows the ice mode. Now the error log is reset. Do not reset more than necessary.

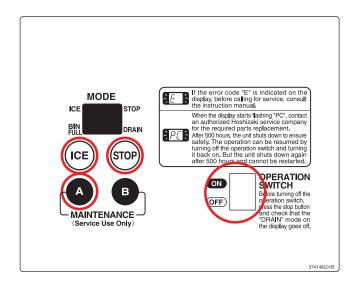


#### [f] RESETTING COMPRESSOR OPERATING HOURS

Note: This operation should be performed only when the display shows "PC".

With the power switch turned off, press and hold the ice, stop and maintenance A buttons. Move the operation switch to the "ON" position. Release the buttons when the display shows the ice mode. Now the compressor operating hours are reset.

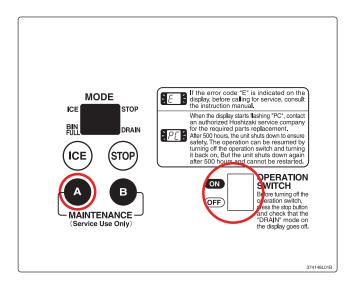
When the compressor starts in 15 seconds after the water supply cycle ends, the error log is not set to be updated. After resetting the compressor operating hours, move the operation switch to the "OFF" position, turn off the power switch, and turn it back on.



#### [g] REDUCING COMPRESSOR STARTING TIME

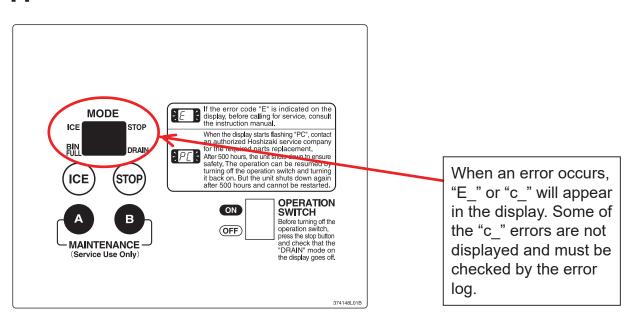
With the power switch turned off, press and hold the maintenance A button. Move the operation switch to the "ON" position. Release the button when the display shows the ice mode.

The compressor starts in 30 seconds after the water supply cycle ends.



#### 6. PROTECTORS

#### [a] INDICATION



When an operational error occurs, "E\_" will appear and blink in the display on the operation board, and the icemaker will stop. When a service call is received, ask the user to check which error code is in the display. Then, see the error code table in "7. ERROR CODES" to locate the cause.

# 7. ERROR CODES

# **Interlock Errors**

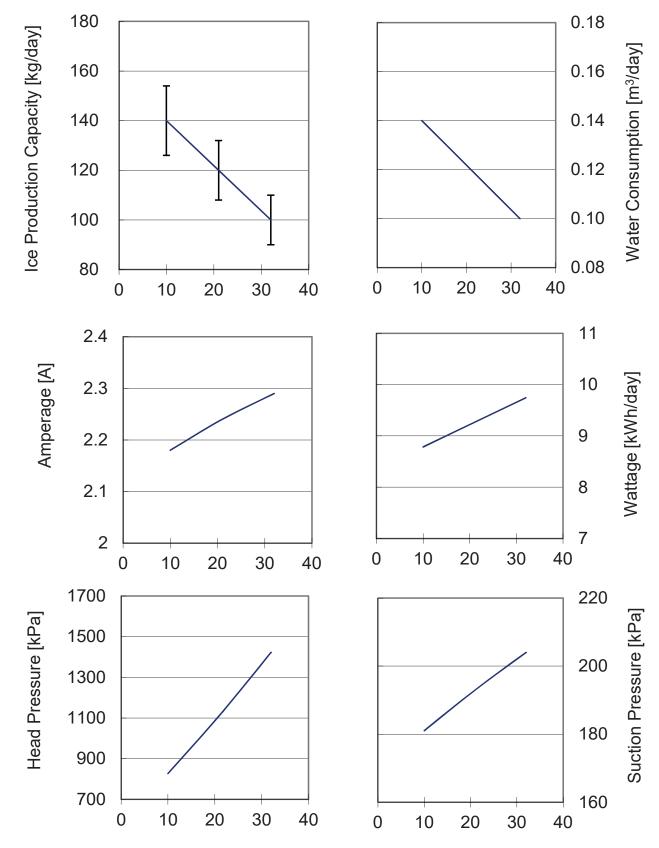
Code	Error	Condition	Operation	Reset	Check/Repair
E0	Icemaking Water Leak	c0 error occurs 2 times in a row.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Water leak from water circuit (reservoir, inlet hose, outlet hose, hose joint, mechanical seal, flush water valve), float switch
E1	Low Ice Production	Icemaking cycle takes too long.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Gas leak, control water valve not closing, vapor lock, freeze, float switch
E2	Float Switch Error	With flush water valve OFF, float switch trips at both upper and lower float levels for 2 seconds.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Float switch
E3	Gear Motor Error or Gear Motor Sensor Circuit Open	Gear motor is ON with rotation sensor or current sensor circuit open.  Gear motor relay is ON with gear motor protective circuit detector OFF.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Rotation sensor, current sensor  Gear motor protective circuit (TPO, overload, etc.), gear motor relay
E4	Abnormal High Side Pressure	c2 error occurs 5 times in 1 hour of compressor operation.	E4 blinks.	N/A	Fan motor, cooling water circuit, refrigeration circuit, condenser clogged, water supply, installation conditions
E5	Gear Motor Drive Element Error	Gear motor is OFF on controller board while rotation sensor signals gear motor rotation or current flows.  Gear motor relay is OFF with gear motor protective circuit detector ON.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Miswiring, gear motor magnet switch or relay Replace controller board.
E8	Discharge Pipe Temperature Error	Discharge pipe thermostat is OFF.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Gas leak, compressor cooling fan failure
EA	Water Thermistor Circuit Open	Water thermistor circuit is open.	EA blinks.	N/A	Water thermistor
Eb	Condenser Thermistor Circuit Open	Condenser thermistor circuit is open.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Condenser thermistor
EC	Evaporator Outlet Thermistor Circuit Open	Evaporator outlet thermistor circuit is open.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Evaporator outlet thermistor
EE	Gear Motor Error	Rotation sensor detects reversing. c5 error occurs 5 times.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Gear motor locked, hunting or overloaded, supply voltage, high ambient temperature
EF	Abnormal Low Voltage	c3 error occurs 3 times in 24 hours.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Supply voltage
ЕН	Discharge Pipe Thermistor Circuit Open	Discharge pipe thermistor circuit is open.	EH blinks.	N/A	Discharge pipe thermistor
EL	Bin Control Switch Error	Bin control protective switch trips.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Bin control switch
En	Low Voltage Sensing Transformer Circuit Open	Low voltage sensing transformer circuit is open.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Low voltage sensing Transformer
EU	Controller Board Error	Controller board IC fails.	Whole unit stops.	Power supply, Turn OFF - Turn ON	Replace controller board.
None	Electric Leak Short Circuit	Electric leak or overcurrent.	Whole unit stops.	Power supply, Turn OFF - Turn ON Replace fuse	Electric leak, fuse

# **Non-Interlock Errors**

Code	Error	Condition	Operation	Reset	Check/Repair
CM Time ""	Microcomputer Read/Write Error	Microcomputer fails to read/write properly.	Memory circuit not available.	Replace controller board.	Error records and compressor operating hours not available on display
c0	Icemaking Water Leak	After initial water supply, float switch trips at lower float level within 5 minutes after gear motor starts and before compressor starts.	Whole unit stops. Flush water valve turns ON for 1 second, then turns OFF. Unit restarts.	Error record only.	Water leak from water circuit (reservoir, hoses, mechanical seal, flush water valve), float switch
c1	Low Water	Water supply continues for more than 90 seconds, or float switch trips at lower float level and does not reset for more than 60 seconds after water supply.	Whole unit stops until reservoir fills up. Only control water valve operates intermittently for 5 minutes.	Automatically resets after reservoir fills up.	Water supply interruption, control water valve not opening, flush water valve not closing, float switch, water leak
c2	Abnormal High Side Pressure	Pressure switch stays OFF for 5 seconds or condenser thermistor reads higher than set point for 5 seconds.	Whole unit stops.	Automatically resets after pressure switch turns ON or condenser thermistor reads lower than set point.	Condenser clogged, cooling water circuit, refrigeration circuit
с3	Abnormal Low Voltage	Voltage stays below setting for more than 1 second with compressor ON and control water valve OFF.	Whole unit stops.	Automatically resets after voltage stays above reset setting for 2 minutes.	Supply voltage
с4	Drain Error	Float switch trips at upper float level in 10 minutes after flush water valve turns ON.	N/A	Error record only.	Flush water valve not opening, control water valve not closing
c5	Gear Motor Error	Rotation rate reduces.  While gear motor is running, voltage detection signal is not input to controller board.	Whole unit stops.	Automatically resets after 30 minutes.	Gear motor overloaded
с7	Evaporator Outlet Temperature Decrease	Evaporator outlet temperature decreases.	Indication only.	Automatically resets.	Evaporator inside not clean, extruding head not clean, heater circuit open
PC	Periodic Parts Replacement	Compressor operating hours reach 20,000 hours.	[20,000 hours] "PC" starts flashing. [20,500 hours] Whole unit stops but can be restarted by turning OFF and ON power supply. [21,000 hours] Whole unit stops again and cannot be restarted.	After replacing parts, reset compressor operating hours.	Replace extruding head (upper bearing) and mechanical seal.

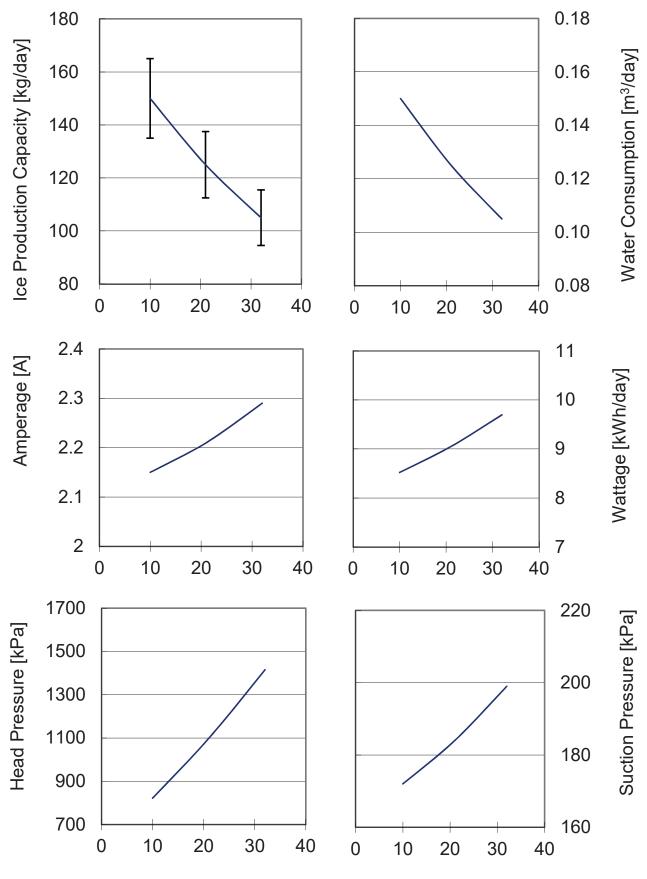
#### 8. PERFORMANCE DATA

# [a] FM-150AKE-HC-SB



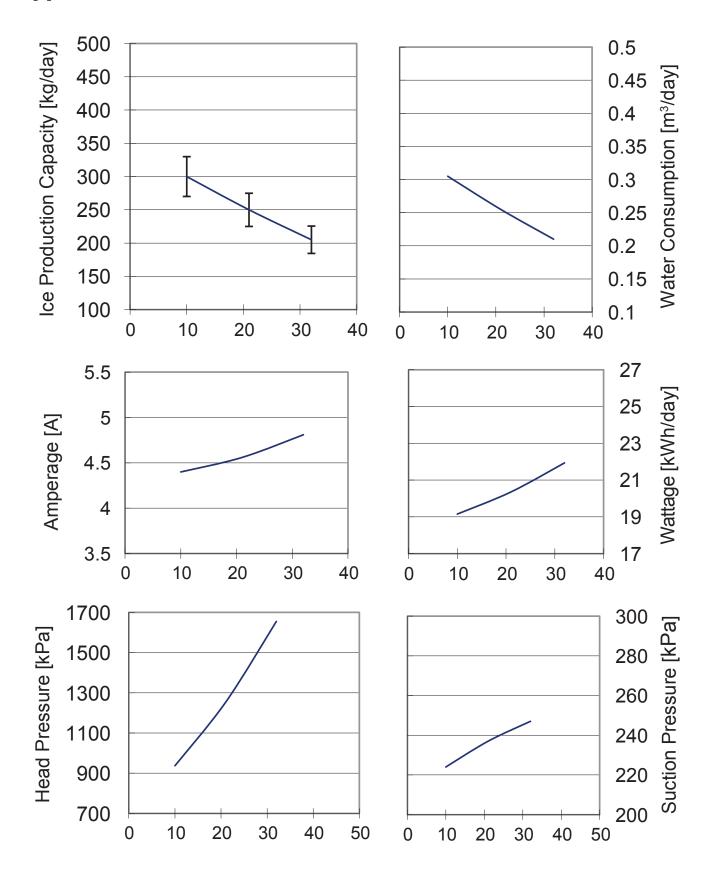
The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10,21/15,32/21,40/35.

#### [b] FM-150AKE-HCN-SB



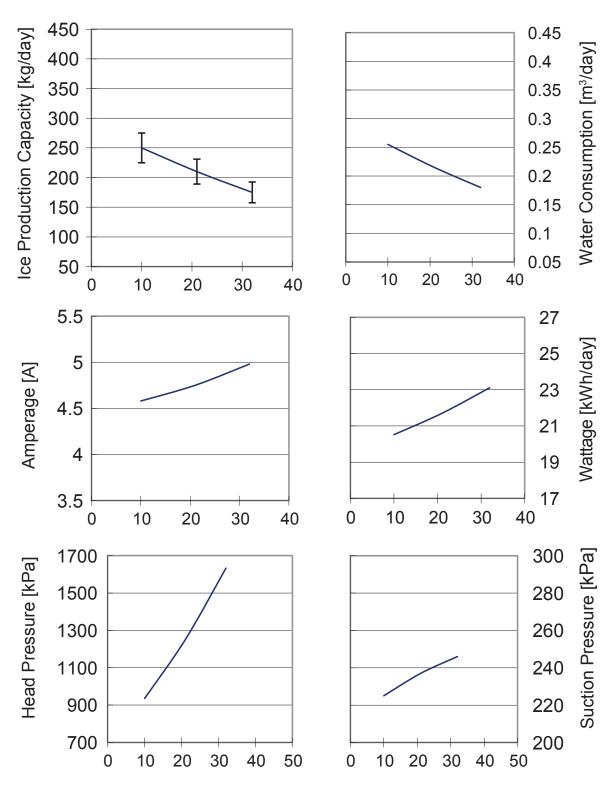
The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10,21/15,32/21,40/35.

#### [c] FM-300AKE-HC



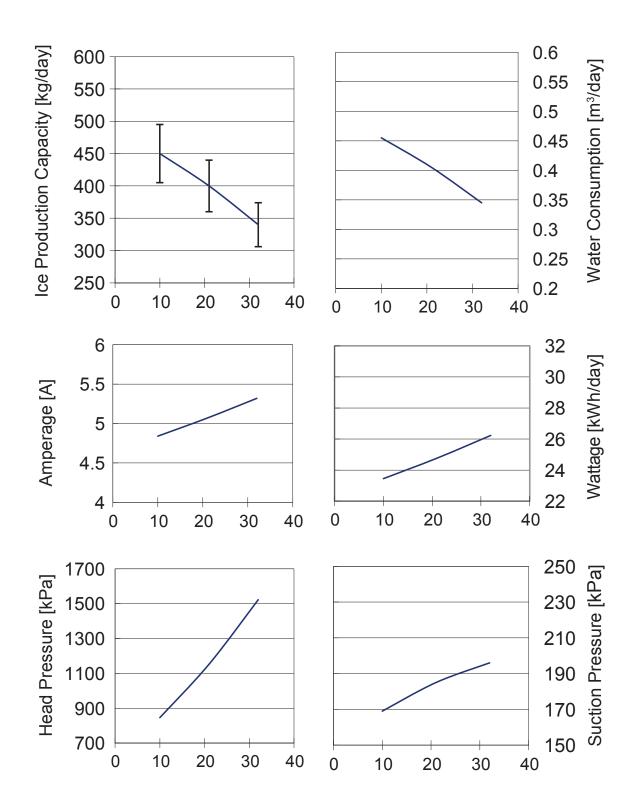
The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10, 21/15, 32/21.

#### [d] FM-300AKE-HCN



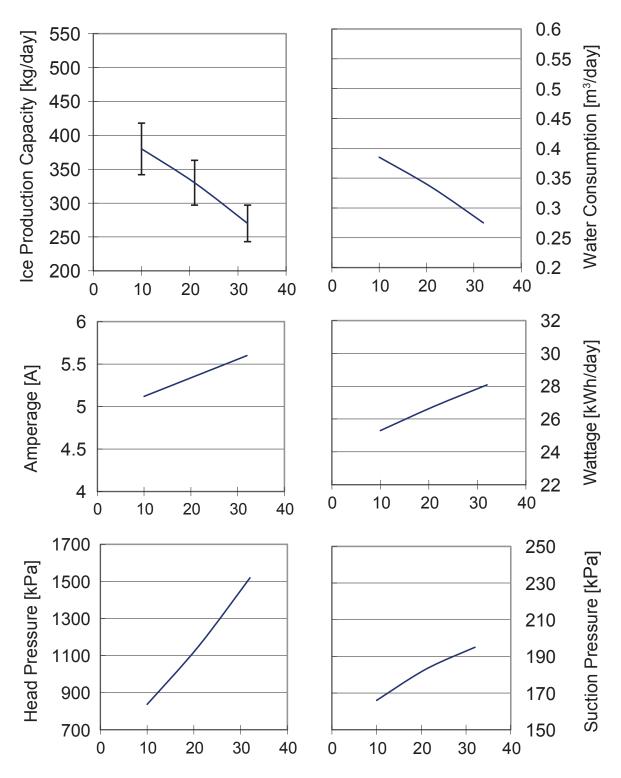
The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10, 21/15, 32/21.

#### [e] FM-480AKE-HC



The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10, 21/15, 32/21.

#### [f] FM-480AKE-HCN



The horizontal axis shows the ambient temperature. It refers to the data of at/wt=10/10, 21/15, 32/21.

# IV. SERVICE DIAGNOSIS

Display error records by operating the operation board (see "III. 5. [d] DISPLAYING ERROR LOG"). Check for a possible cause and service the unit.

# 1. NO ICE PRODUCTION

PROBLEM	POSSIBLE CAUSE		REMEDY	
[1] The icemaker will not start.	a) Power supply	1. OFF position.	1. Move to ON position.	
		2. Loose connections.	2. Tighten.	
		3. Bad contacts.	3. Check for continuity and replace.	
		4. Blown fuse.	4. Replace.	
		5. Voltage too low.	5. Get recommended voltage.	
	b) Fuse	Blown out. No indication on operation board.	Locate and resolve the cause of short circuit (ex. control water valve, flush water valve), and replace.	
	c) Transformer receptacle	1. Disconnected.	1. Connect.	
	d) Operation switch	1. OFF position.	1. Move to ON position.	
		2. Bad contacts.	2. Check for continuity and replace.	
	e) Transformer	Coil winding opened.	1. Replace.	
	f) Water valve	Coil winding opened.	1. Replace.	
	g) Water supply tap	1. Closed.	1. Open.	
		2. Water failure.	2. Wait till water is supplied.	
	h) Plug and receptacle (control box)	1. Disconnected.	1. Connect.	
		Terminal out of plug or receptacle.	Insert terminal back in position.	
	i) Reed switch (spout)	1. Tripped.	1. See 1 - [3] - a).	
	j) Overload protector	1. Tripped.	2. Reset.	
	k) Model number	1. Incorrect.	2. Set correct number. See "III. 5. [b] SETTING MODEL NUMBER".	
[2] Water does not	a) Water control	Contacts fused.	Replace controller board.	
stop, and the icemaker will not	relay (controller board)	2. Coil winding opened.	2. Replace controller board.	
start.	b) Float switch	1. Bad contacts.	1. Check for continuity and replace.	
		Float does not move freely.	2. Clean or replace.	
	c) Flush water valve	Valve seat clogged and water leaking.	1. Clean or replace.	
	d) Hoses	1. Disconnected.	1. Connect.	
	e) Mechanical seal	1. Water leaks.	1. Replace.	
	f) Reservoir	1. Cracked.	1. Replace.	
[3] Water has been supplied, but the icemaker will not start.	a) Bin control	1. Bad contacts.	Check for continuity and replace.	
	b) Gear motor protector (thermal breaker)	1. Tripped.	Find out the cause, resolve it, and press reset button on motor protector.	
	c) Controller board	1. Defective.	1. Replace.	

PROBLEM	POSSI	BLE CAUSE	REMEDY	
[3] (Continued)	d) Pressure switch,	Dirty condenser fins.	1. Clean.	
	condenser thermistor	Ambient temperature too warm.	Check for recommended temperature.	
		3. Fan not rotating.	3. Replace.	
		Condenser water pressure too low or off.	Check and get recommended pressure.	
		5. Water regulating valve clogged.	5. Clean.	
		Refrigerant overcharged.	6. Recharge.	
		7. Refrigerant line or components plugged.	7. Clean and replace drier.	
		8. Bad contacts.	8. Check for continuity and replace.	
		9. Loose connections.	9. Tighten.	
	e) Thermostat (water-cooled	Ambient temperature too warm.	Check for recommended temperature.	
	model)	Compressor cooling fan motor defective.	2. Replace.	
		3. Bad contacts.	3. Check for continuity and replace.	
		4. Loose connections.	4. Tighten.	
	f) Gear motor protect relay	Coil winding opened.	1. Replace.	
		2. Bad contacts.	2. Check for continuity and replace.	
[4] Gear motor starts, but compressor will not start or operates intermittently.	a) X4 relay (controller board) b) X6 relay	1. Bad contacts.	Check for continuity and replace controller board.	
		2. Coil winding opened.	2. Replace controller board.	
		1. Bad contacts.	Check for continuity and replace     X6 relay.	
		2. Coil winding opened.	2. Replace X6 relay.	
	b) Compressor	Loose connections.	1. Tighten.	
		Motor winding opened or earthed.	2. Replace.	
		Motor protector tripped.	Find out the cause of overheat or overcurrent.	
	c) Power supply	Circuit ampacity too low.	Install a larger-sized conductor.	
	d) Controller board	1. Defective.	1. Replace	
	e) Start capacitor or run capacitor	1. Defective.	1. Replace	
[5] Gear motor and compressor start, but no ice is produced.	a) Refrigerant line	1. Gas leaks.	Check for leaks with a leak     detector. Reweld leak, replace     drier and charge with refrigerant.     The amount of refrigerant is     marked on nameplate or label.	
		Refrigerant line clogged.	2. Replace the clogged component.	

# 2. LOW ICE PRODUCTION

PROBLEM	POSS	IBLE CAUSE	REMEDY	
[1] Low ice	a) Refrigerant line	1. Gas leaks.	1. See 1 - [5] - a).	
production		2. Refrigerant line clogged.	2. Replace the clogged component.	
		3. Overcharged.	3. Recharge.	
	b) High-side pressure too high	Dirty air filter or condenser.	1. Clean.	
		Ambient or condenser water temperature too warm.	Check for recommended temperature.	
	c) Expansion valve (not adjustable)	Condenser water pressure too low or off.	Check and get recommended pressure.	
			4. Fan rotating too slow.	4. Replace.
		5. Water regulating valve clogged.	5. Clean.	
		6. Bad ventilation.	6. Remove anything blocking vents.	
		7. Less than specified clearance at rear, sides and top.	7. Allow proper clearance for ventilation.	
		Low-side pressure exceeding the limit.	1. Replace.	
	d) Evaporator	1. Evaporator pipe crushed.	1. Replace.	

# 3. OTHERS

PROBLEM	POSS	IBLE CAUSE	REMEDY
[1] Abnormal noise	a) Fan motor	Bearing worn out.	1. Replace.
	(condenser unit)	2. Fan blade deformed.	2. Replace fan blade.
		Fan blade does not move freely.	3. Replace.
	b) Compressor	Bearings worn out, or cylinder valve defective.	1. Replace.
		2. Mounting pad out of position.	2. Reinstall.
	c) Refrigerant lines	Rub or touch lines or other surfaces.	1. Replace.
	d) Gear motor (ice making)	Bearing or gear wear/ damage.	1. Replace.
	e) Evaporator	Low-side pressure too low.	See if expansion valve bulb is mounted properly, and replace the valve if necessary.
		Scale on inside wall of freezing cylinder.	2. Remove auger. Use a solution of lime removing cleaner to clean periodically. If water is found to surpass the following levels, install a conditioner.  Hardness 50 ppm Silica 30 ppm
	f) Heater	1. Defective.	1. Replace.
	g) CPR (condenser unit)	1. Internal leaks.	1. Replace.

PROBLEM	POSSIBLE CAUSE		REMEDY
[2] Overflow from reservoir (Water does not stop.)	a) Water supply	1. Water pressure too high.	1. Install a pressure reducing valve.
	b) Water valve	Diaphragm does not close.	Clean or replace.
	c) Float switch	1. Bad contacts.	1. Check for continuity and replace.
[3] Gear motor protector	a) Power supply voltage	1. Too high or too low.	Connect the unit to a power supply of proper voltage.
operates frequently.	b) Evaporator assy	Bearings or auger worn out.	Replace bearing or auger.

#### V. REMOVAL AND REPLACEMENT

V	VA	R	N	IN	G

Only trained service engineer can service the R290 refrigeration unit.

#### 1. SERVICE FOR REFRIGERANT LINES

#### [a] SERVICE INFORMATION

#### 1) Allowable Compressor Opening Time and Prevention of Lubricant Mixture [R290]

The compressor must not be opened more than 30 minutes in replacement or service. Do not mix lubricants of different compressors even if both are charged with the same refrigerant, except when they use the same lubricant.

#### 2) Treatment for Refrigerant Leak [R290]

If a refrigerant leak occurs in the low side of an ice maker, air may be drawn in. Even if the low side pressure is higher than the atmospheric pressure in normal operation, a continuous refrigerant leak will eventually reduce the low side pressure below the atmospheric pressure and will cause air suction. Air contains a large amount of moisture, and ester oil easily absorbs a lot of moisture. If an ice maker charged with R290 has possibly drawn in air, the drier must be replaced. Be sure to use a drier designed for R290.

#### 3) Handling of Handy Flux [R290]

Brazing is needed to connect the refrigeration circuit pipes. It is no problem to use the same handy flux that has been used for the current refrigerants. However, its entrance into the refrigerant circuit should be avoided as much as possible.

#### 4) Oil for Processing of Copper Tubing [R290]

When processing the copper tubing for service, wipe off oil, if any used, by using alcohol or the like. Do not use too much oil or let it into the tubing, as wax contained in the oil will clog the capillary tubing.

#### 5) Service Parts for R290

Some parts used for refrigerants other than R290 are similar to those for R290. But never use any parts unless they are specified for R290 because their endurance against the refrigerant has not been evaluated. Also, for R290, do not use any parts that have been used for other refrigerants. Otherwise, wax and chlorine remaining on the parts may adversely affect the R290.

#### 6) Replacement Copper Tubing [R290]

The copper tubes currently in use are suitable for R290. But do not use them if oily inside. The residual oil in copper tubes should be as little as possible. (Low residual oil type copper tubes are used in the shipped units.)

#### 7) Evacuation, Vacuum Pump and Refrigerant Charge [R290]

Never allow the oil in the vacuum pump to flow backward. The vacuum level and vacuum pump may be the same as those for the current refrigerants. However, the rubber hose and gauge manifold to be used for evacuation and refrigerant charge should be exclusively for R290.

#### 8) Refrigerant Leak Check

Refrigerant leaks can be detected by charging the unit with a little refrigerant, raising the pressure with nitrogen and using an electronic detector. Do not use air or oxygen instead of nitrogen for this purpose, or rise in pressure as well as in temperature may cause R290 to suddenly react with oxygen and explode. Be sure to use nitrogen to prevent explosion.

#### [b] REFRIGERANT RECOVERY

#### **WARNING**

Do not recover the R290 refrigerant in a refrigerant recovery cylinder for R404A or R134a.

The R290 refrigerant has almost no effect on global warming, so can be released to outdoors atmosphere without risk to the environment. Recovery should only be considered if the unit cannot be taken outdoors to evacuate the circuit.

If R290 is recovered in a refrigerant recovery cylinder for R404A or R134a, there is a risk of ignition and a refrigerant destruction operator may reject collection.

#### [c] REFRIGERANT REMOVAL

#### WARNING

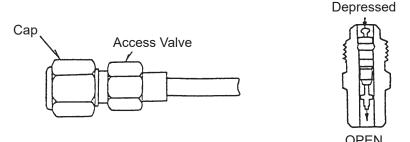
Remove the R290 refrigerant from the unit in an area well-ventilated and free from open flames.

When removing the refrigerant from the unit, be sure the surrounding area is well-ventilated and free from open flames. Discharge refrigerant in small amounts into the atmosphere. If the surrounding area is not well-ventilated and exposed to open flames, recover the refrigerant in a refrigerant recovery cylinder and discharge it in small amounts into the atmosphere outdoors.

#### [d] EVACUATION AND RECHARGE

- 1) Attach charging hoses, service manifold and vacuum pump to the low-side and highside (to be fitted by service engineer) access valves.
- 2) Turn on the vacuum pump.

- 3) Allow the vacuum pump to pull down to a 760 mmHg vacuum. Evacuating period depends on the pump capacity.
- 4) Close the low-side and high-side valves on the service manifold.
- 5) Disconnect the vacuum pump, and attach a refrigerant charging cylinder to accurately weigh in the liquid charge. Remember to purge any air from the charging hose. See the nameplate for the required refrigerant charge.
- 6) Open the high-side valve on the gauge manifold, and accurately measure in the liquid charge. Close the valve on the charging cylinder before closing the high-side manifold valve. Any remaining liquid in the line can be charged into the low side.
- 7) Do not charge more than 150 g of R290.
- 8) Turn on the icemaker. Release the high-side access connector, and allow pressure in the charging line to slowly enter the low side of the system. Cap off the high-side access valve. When pressure reduces on the low side, disconnect the low side charging line and cap off the access valve.
- 9) Always cap the access valves to prevent a refrigerant leak.
- 10) Always thoroughly leak test all joints and valve caps.
- 11) Avoid charging large quantities of liquid into the low side in case of damage to the compressor.



#### 2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT

- 1) Make sure the surrounding area of the unit to be repaired is free from ignition sources.
- 2) Open the window or operate the ventilator to make the surrounding area well-ventilated.
- 3) Connect the piercing valve. Recover the refrigerant in the specified manner or discharge it into the atmosphere.
- 4) The refrigeration circuit pressure is back to atmospheric pressure. Pressurize the circuit using nitrogen.
- 5) Discharge the pressurized nitrogen and recover the refrigeration circuit to atmospheric pressure.
- 6) Repeat 4) and 5) above. Use a gas detector at the open end of refrigeration circuit to detect any gas left inside the circuit.

7) Evacuate the refrigeration circuit for 30 minutes to remove any gas left inside the circuit.

#### **WARNING**

Remove the R290 refrigerant from the unit in an area well-ventilated and free from open flames.

Note: Attach an access valve for recharging the unit charged by a lock ring.

#### 3. COMPRESSOR

#### **IMPORTANT** -

Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made.

- 1) Disconnect the power source.
- 2) Remove the panels.
- 3) Remove the terminal cover on the compressor, and disconnect the compressor wiring.
- 4) Remove the refrigerant from the unit and then any residual refrigerant still existing in the unit to allow welding process. (See "2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT".).
- 5) Remove the discharge, suction and access pipes from the compressor using brazing equipment.

#### WARNING

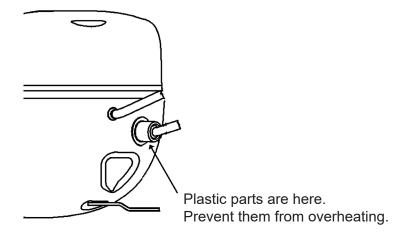
- 1. When it is required to disconnect the pipes using brazing equipment, be careful that the refrigerant in the oil left inside the pipes may burn.
- 2. When repairing a refrigerant system, be careful not to let the burner flame contact any electrical wires or insulation.
- 6) Remove the bolts and rubber grommets.
- 7) Slide and remove the compressor. Unpack the new compressor package. Install the new compressor.
- 8) Attach the rubber grommets of the previous compressor.
- 9) Clean the suction and discharge pipes with an abrasive cloth/paper.
- 10) Place the compressor in position, and secure it using the bolts and washers.

- 11) Remove plugs from the discharge, suction and access pipes.
- 12) Braze the access, suction and discharge pipes (Do not change this order) with nitrogen gas flowing at the pressure of 0.2 0.3 bar.

#### **WARNING**

Always protect the compressor body around the suction pipe by using a damp cloth to prevent the inner plastic parts from overheating. Do not braze with the compressor body exceeding 120°C. [FM-150 only]

- 13) Install the new drier (See "4. DRIER").
- 14) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
- 15) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge (See "1. [d] EVACUATION AND RECHARGE").
- 16) Connect the terminals to the compressor, and replace the terminal cover in its correct position.
- 17) Refit the panels in their correct position.
- 18) Connect the power source.



#### 4. DRIER

#### IMPORTANT -

Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made.

- 1) Disconnect the power source.
- 2) Remove the front panel.
- Remove the refrigerant from the unit and then any residual refrigerant still existing in the unit to allow welding process. (See "2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT".).

4) Remove the drier using brazing equipment.

#### **WARNING**

When it is required to disconnect the pipes using brazing equipment, be careful that the refrigerant in the oil left inside the pipes may burn.

- 5) Install the new drier with the arrow on the drier in the direction of the refrigerant flow. Use nitrogen gas at the pressure of 0.2 0.3 bar when brazing the tubings.
- 6) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
- 7) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge (See "1. [d] EVACUATION AND RECHARGE").
- 8) Refit the front panel in its correct position.
- 9) Connect the power source.

#### 5. EXPANSION VALVE

#### IMPORTANT ·

Sometimes moisture in the refrigerant circuit exceeds the drier capacity and freezes up at the expansion valve. Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made.

- 1) Disconnect the power source.
- 2) Remove the front panel.
- Remove the refrigerant from the unit and then any residual refrigerant still existing in the unit to allow welding process. (See "2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT".).
- 4) Remove the expansion valve bulb at the evaporator outlet.
- 5) Remove the expansion valve cover, and disconnect the expansion valve using brazing equipment.

#### WARNING

When it is required to disconnect the pipes using brazing equipment, be careful that the refrigerant in the oil left inside the pipes may burn.

6) Braze the new expansion valve with nitrogen gas flowing at the pressure of 0.2 - 0.3 bar.

#### **WARNING**

Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 120°C.

- 7) Install the new drier (See "4. DRIER").
- 8) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
- 9) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge (See "1. [d] EVACUATION AND RECHARGE").
- 10) Attach the bulb to the suction line. Be sure to secure the bulb using a wire or clamp and replace the insulation.
- 11) Place the new set of expansion valve covers in position.
- 12) Refit the front panel in its correct position.
- 13) Connect the power source.

#### 6. WATER REGULATING VALVE - WATER-COOLED MODEL ONLY

#### **IMPORTANT** -

Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made.

- 1) Unplug the icemaker.
- 2) Close the water supply tap.
- 3) Remove the panels.
- 4) Remove the refrigerant from the unit and then any residual refrigerant still existing in the unit to allow welding process. (See "2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT".).
- 5) Disconnect the capillary tube using brazing equipment.

#### WARNING

When it is required to disconnect the pipes using brazing equipment, be careful that the refrigerant in the oil left inside the pipes may burn.

- 6) Disconnect the flare-connections of the valve.
- 7) Remove the screws and the valve from the bracket.
- 8) Install the new valve, and braze the capillary tube.
- 9) Install the new drier.
- 10) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
- 11) Connect the flare-connections.
- 12) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge.
- 13) Open the water supply tap.
- 14) Plug in the icemaker.
- 15) Check for water leaks.
- 16) If necessary, adjust the valve.
- 17) Replace the panels in position.

#### 7. EVAPORATOR ASSEMBLY

See the exploded view under "III. 3. ICEMAKING MECHANISM".

- 1) Push the stop button to drain the water in the evaporator.
- 2) Disconnect the power source.
- 3) Remove the panels.
- 4) Remove the three hex head bolts, and take off the spout from the evaporator.
- 5) Remove the bin control switch.
- 6) Remove the spout gasket at the top of the evaporator.

#### **CUTTER**

7) Remove the bolt and lift off the cutter.

#### **BELT HEATER**

8) Detach the spring, and remove the belt heater.

#### **EXTRUDING HEAD**

- 9) Remove the sealing bolts, and lift off the extruding head.
- 10) Check the bearing inside the extruding head. If it is worn out or scratched, replace the bearing.

Note: Replacing the bearing needs a fitting tool. If it is not available, replace the whole extruding head.

#### AUGER

11) Lift out the auger. Check the top and bottom areas in contact with the bearings. If the surface is scratched or pitted, replace the auger. Check the blade edge of the auger. If it is scratched or worn where it has contacted the evaporator, replace it.

#### **EVAPORATOR**

Note: Skip the following steps 12) through 18) when the evaporator does not need replacement.

12) Remove the refrigerant from the unit and then any residual refrigerant still existing in the unit to allow welding process. (See "2. WELDING REPAIR FOR R290 REFRIGERATION CIRCUIT".).

#### — IMPORTANT -

Always install a new drier every time the sealed refrigeration system is opened. Do not replace the drier until after all other repair or replacement has been made.

- 13) Remove the bulb of the expansion valve.
- 14) Disconnect the brazing connections of the expansion valve and the copper tube low side from the evaporator, using brazing equipment.

#### WARNING

- 1. When it is required to disconnect the pipes using brazing equipment, be careful that the refrigerant in the oil left inside the pipes may burn.
- 2. Always protect the valve body by using a damp cloth to prevent the valve from overheating. Do not braze with the valve body exceeding 120°C.

- 15) Remove the two truss head machine screws and the strap securing the evaporator.
- 16) Disconnect the hoses from the evaporator.
- 17) Remove the four socket head cap screws securing the evaporator with the housing.
- 18) Lift off the evaporator.

#### **HOUSING AND MECHANICAL SEAL**

- 19) The mechanical seal consists of two parts. One part rotates with the auger, the other is static and is fitted into a top recess in the housing. If the contact surfaces of these two parts become worn or scratched, the mechanical seal may leak water and should be replaced.
- 20) Remove the O-ring on the top outer edge of the housing.
- 21) Remove the four bolts and lift the housing clear of the gear motor. Check the bearing inside the housing. If it is worn or scratched, replace it using a fitting tool. Carefully ease out the lower part of the mechanical seal before replacing the bearing.

Note: If a fitting tool is not available, replace the whole lower housing complete with bearing.

#### **GEAR MOTOR**

- 22) Cut the connectors.
- 23) Remove the three socket head cap screws securing the gear motor.
- 24) Assemble the removed parts in the reverse order of which they were removed.

#### **WARNING**

Be careful not to scratch the surface of the O-ring, or it may cause water leaks. Handle the mechanical seal with care not to scratch nor to contaminate its contact surface.

- 25) When replacing the evaporator [FM-150 only];
  - (a) Braze the new evaporator with nitrogen gas flowing at the pressure of 0.2 0.3 bar.
  - (b) Replace the drier.
  - (c) Check for leaks using nitrogen gas (10 bar) and soap bubbles.
  - (d) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge. (See "1. [d] EVACUATION AND RECHARGE").

- 26) Refit the panels in their correct position.
- 27) Connect the power source.

#### 8. CONTROL WATER VALVE

- 1) Disconnect the power source.
- 2) Close the water supply tap.
- 3) Remove the panels.
- 4) Disconnect the terminals from the control water valve.
- 5) Remove the cover reservoir Inlet from the control water valve.
- 6) Loosen the fitting nut on the control water valve Inlets, and remove the control water valve. Do not lose the packings inside the fitting nut.
- 7) Install the new control water valve.
- 8) Assemble the removed parts in the reverse order of which they were removed.
- 9) Open the water supply tap.
- 10) Connect the power source.
- 11) Check for water leaks.
- 12) Refit the panels in their correct position.

#### 9. FLUSH WATER VALVE

- 1) Push the stop button, and after 5 minutes disconnect the power source.
- 2) Close the water supply tap.
- 3) Remove the panels.
- 4) Remove the clamp and disconnect the hose from the flush water valve.

Note: Water may still remain inside the evaporator. Be sure to drain the water into the drain pan.

- 5) Disconnect the terminals from the flush water valve.
- 6) Remove the flush water valve from the bracket.
- 7) Remove the drain pipe from the flush water valve.

- 8) Connect the drain pipe to the new flush water valve, and place the valve in position.
- 9) Connect the hose to the flush water valve, and secure it with the clamp.
- 10) Pour water into the reservoir, and check for water leaks on the flush water valve.
- 11) Open the water supply tap.
- 12) Connect the power source.
- 13) Check for water leaks.
- 14) Push the stop button, and make sure water is flushing.
- 15) Push the ice button.
- 16) Refit the panels in their correct position.

#### 10. CONTROLLER BOARD

#### - IMPORTANT -

A single type controller board is supplied as a service board. Some modifications and adjustment will be required to fit the icemaker models. Do not repair any parts and electronic devices on the controller board in the field. Replace the whole board with a new service board.

#### [a] MODIFICATION

- 1) Check that the service board package includes:

  Controller board 1 pc. Instruction sheet 1 pc.
- 2) Modify the service board referring to the instruction sheet attached (Set the model number according to "III. 5. [b] SETTING MODEL NUMBER").

#### [b] REPLACEMENT

- 1) Disconnect the power source.
- 2) Remove the front panel.
- 3) Remove screws and the control box cover.
- 4) Disconnect the connectors and board support from the controller board.
- 5) Remove the controller board from the control box.

- 6) Install the new controller board and reassemble the control box in the reverse order of the removal procedure.
- 7) Replace the front panel in its correct position.
- 8) Connect the power source.