



CUBE ICE MACHINE

USER MANUAL



Models KU25, KU45 and KU90
Air-Cooled Ice Machines with Storage Bin

Read this manual carefully before installation and operation. Keep these instructions in a safe place for future reference. For questions, contact Efe Ice System Mak. San. Tic. Ltd. Şti. Customer Service at whatsapp 0850 308 91 84 or visit www.efeicesystems.com

1. SAFETY INFORMATION

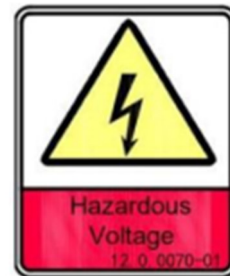
WARNING

Pay attention to all warning labels attached to the ice machine.



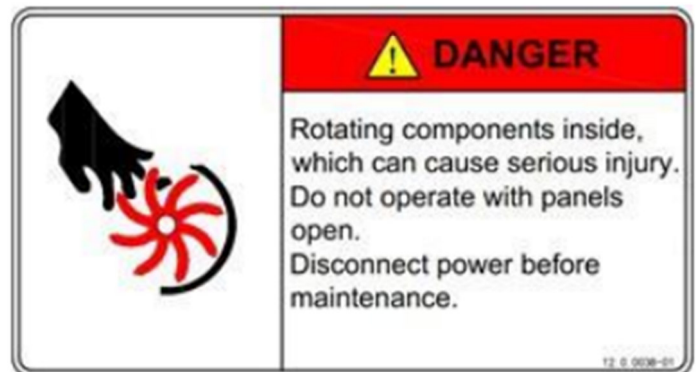
DANGEROUS VOLTAGE

This label indicates hazardous voltage. There is a risk of electric shock. Disconnect power before servicing the unit.



ROTATING PARTS WARNING

The machine contains rotating components that may cause serious mechanical injury. Do not operate the machine with panels open. Disconnect power before maintenance.



FIRE HAZARD

Cyclopentane, a flammable foaming agent, may be used in the product. There is a risk of fire.

The machine may use flammable refrigerant R290. Observe all applicable fire-safety precautions.



General Safety Precautions

- Do not use this product outdoors. Do not allow children or persons with limited physical or mental capabilities to play with or operate the machine without appropriate supervision.
- Installation, repair and maintenance must be carried out by qualified professional personnel. Incorrect work may result in electric shock, fire or personal injury.
- After delivery, keep the machine upright for 24 hours before operation so that compressor lubricant can settle. Do not turn the machine upside down or lay it horizontally. During transport, keep the cabinet upright and do not exceed a 45° tilt.
- Do not install the machine in wet areas or where water can easily splash onto the unit.
- The grounding connection must not be connected to gas pipes, water pipes, telephone lines, lightning conductors or similar systems.
- Do not insert fingers or objects into ventilation or exhaust openings.
- Do not store volatile or flammable substances in or near the ice machine.
- Do not store objects or freeze food in the ice bin. Keep the ice scoop clean.
- Install the machine on a floor capable of supporting its weight and provide adequate ventilation around the unit.
- Use only the power supply specified on the machine nameplate. Do not connect the machine to hot water.
- The electrical outlet must be reliably grounded and protected by an appropriate leakage/residual-current protection device.
- Disconnect electrical power before manual cleaning, repair or maintenance. Remove remaining ice before service to prevent contamination.
- Do not spray water directly onto the machine surface during cleaning, as this may cause short circuits, leakage or other failures.
- If a fault occurs, switch off the unit and contact qualified service personnel.

2. FLAMMABLE REFRIGERANT WARNING

This ice machine may contain R290/R404A refrigerant. Where a flammable refrigerant is used, there is a risk of fire or explosion.



- Do not use mechanical devices to accelerate defrosting. Do not puncture refrigerant tubing.
- Repairs involving refrigerant must be performed only by trained service personnel.
- Read the repair/user manual before attempting service and follow all safety precautions.
- Dispose of the product in accordance with applicable national and local regulations.

3. GENERAL DESCRIPTION

The ice machine is fully automatic. When correctly installed and connected to potable water and the proper power supply, the ice-making process operates automatically. When the storage bin is full, the machine stops automatically.

4. INSTALLATION

Installation Location

- Install the ice machine in a suitable indoor location at an altitude not exceeding 1,000 m above sea level.
- Recommended ambient temperature: 17–21°C.
- Power supply: rated voltage shown on the machine nameplate, within ±6% (220V 50-60hz or 380 V 50-60hz, depending on model).
- Water supply: potable water at 3.1–5.5 bar; recommended inlet water temperature 7–21°C.

- Keep the machine away from heat sources and direct sunlight. Do not operate it in excessively hot or cold environments.
- Provide sufficient ventilation and clearance around the unit. Follow the model-specific installation clearance requirements.
- Place the machine on a level floor capable of supporting its weight.
- Provide a properly grounded electrical supply with leakage protection and a suitable floor drain close to the installation point.



5. SPECIFICATIONS

Specification	KU25	KU45	KU90
Voltage	220V, 380V, 50–60 Hz	380V, 50–60 Hz	380V, 50–60 Hz
Power	1500 W	2200W	4000W
Bin Capacity	170 kg	170 kg	350 kg
Nominal Ice Capacity	250kg/24h	450kg/24h	900kg/24h
Refrigerant	R404	R404	R404
Cooling	Air-cooled	Air-cooled	Air-cooled
Material	Food-grade PE + SUS304 stainless steel	Food-grade PE + SUS304 stainless steel	Food-grade PE + SUS304 stainless steel
Certification	ISO 9001, ISO 22000, CE, Energy Star	ISO 9001, ISO 22000, CE, Energy Star	ISO 9001, ISO 22000, CE, Energy Star
Warranty	1 year	1 year	1 year

6. INSTALLATION PROCEDURE

1. On delivery, inspect the ice machine and all accessories for damage. Verify the model and nameplate information.
2. Clean the ice bin and internal surfaces with a sponge dampened with warm water. Rinse with potable water and dry.
3. Position the machine on a level working surface so water can flow evenly over the evaporator.
4. For air-cooled units, provide good ventilation. The original installation guidance specifies at least 30cm. at the front, cm in. at the rear and 30cm in. on each side.
5. Use the adjustable feet for leveling and to provide clearance for floor cleaning.
6. Connect the inlet water filter (not included) and water line according to the installation diagram. If an appropriate potable-water treatment system is already installed, an additional filter may not be required.



Using an anti-scale filter is crucial for the health of the machine; limescale shortens the lifespan of the evaporator. A filter or water treatment system is not included with the machine. Install it in the correct flow direction. Filters should generally be replaced every 2–3 months, depending on water quality and usage.

7. Connect the machine to the water supply using the supplied 3/8", 1/2" or 5/8" inlet pipe, as applicable. Installing a shut-off valve in the water supply line is recommended.

8. Make sure the drain pipe is free of debris and connect it to the drain outlet. An open floor drain is recommended.

9. Drain-pipe joints must not be higher than the machine drain outlet and must maintain proper downward drainage.

10. Verify the electrical requirements on the nameplate and make sure the power supply complies.

11. A circuit breaker/switch with reliable grounding and leakage protection is required.

12. Switch off the supply before connecting the machine to electrical power.



7. START-UP AND OPERATION

Before Start-Up

Confirm that all packaging tape has been removed; all accessories and loose items have been removed from the ice bin; the machine is level; the water line is connected and the water valve is open; the electrical connection is correct; and ambient temperature, water temperature and water pressure meet the stated requirements.

Starting the Machine

Turn on the power switch. After start-up, the machine begins the automatic ice-making sequence.

Normal Operation Checks

- Confirm that there is water in the water trough without overflow; the pump operates correctly and water flows evenly over the evaporator; the compressor operates normally; the fan on air-cooled machines runs correctly with steady airflow; and there is no abnormal noise.
- A batch of ice may take approximately 15–20 minutes depending on machine capacity, ambient temperature and inlet-water temperature. Higher temperatures increase the ice-making time.

Operating Sequence

- Self-check: On initial start-up, the machine performs a self-check and pumps out remaining water.
- Water filling: After power is supplied, the inlet valve opens and water enters the machine.
- Ice making: After approximately 30 seconds of pre-cooling, the water pump starts and water flows evenly over the evaporator. Ice cubes gradually form in the cube tray.
- Ice harvest/drop: At the end of ice making, the water pump stops and the defrost valve opens, allowing hot gas into the evaporator. The ice cubes release and slide into the storage bin.

WARNING: Keep hands out of the ice bin during the harvest process to prevent injury or contamination.

- Shutdown: Press the Power/On-Off button on the control panel to stop the machine.
- Full-bin automatic stop: When the bin reaches the preset ice level, the machine stops automatically. After ice is removed, ice production resumes automatically after a short delay.

If the machine will not be used for an extended period, disconnect both power and water supplies.

Condensation may be observed in the ice maker's expansion valve and compressor section following defrost cycles. The formation of droplets due to this condensation is normal.

8. PROTECTION FUNCTIONS

- The machine stops for safety protection if it fails to detect falling ice for three consecutive cycles.
- The machine stops if an excessively high ambient/operating temperature is detected.
- Where applicable, a water-cooled machine stops if an abnormal water-supply condition is detected.

9. MAINTENANCE AND CLEANING

Maintenance must be performed by qualified professional personnel. Before cleaning or maintenance, switch off both power and water supplies.

Stainless steel can corrode if it is not properly maintained.

Internal Cleaning

The inside of the ice storage bin may be washed with water. Do not directly wash the water pump, evaporator electrical components or other areas that must remain protected from water.

Condenser

For air-cooled ice makers, clean the condenser approximately every three weeks using a soft brush or a vacuum cleaner with a brush attachment. Clean the condenser filter approximately every two weeks.

WARNING: Condenser fins may have sharp edges. Use care during cleaning.

Cleaning Function

Empty the ice bin first. Clean, sanitize and thoroughly rinse the bin, ice slide board, water distribution pipe, water supply pipe and water pump as applicable.

Water Line

Clean the ice machine water line regularly to maintain food safety.

Winterizing / Long-Term Shutdown

Turn off the water and power supplies and drain residual water from the water trough, inlet pipe and drain pipe.

Routine maintenance is not covered by the manufacturer's warranty.

10. BASIC TROUBLESHOOTING CHECKS

Water Supply

Check that there is water in the water trough, water pressure is within 3.1–5.5 bar, inlet water temperature is within the specified range, the water valve is open and there are no leaks.

Power Supply

If the display is blank or shows OFF, check the plug, outlet and main power switch.

If a failure is caused by lack of water, unsuitable electrical supply, environmental conditions or other user-related causes rather than a defect in the ice maker, warranty coverage may not apply.

PERFORMANCE TABLE (1,000 kg/24h)

Air Temperature (°C)	Water Temperature (°C)			
	7°C	15°C	21°C	27°C
10°C	1,000 kg 100%	966 kg 97%	934 kg 93%	900 kg 90%
21°C	966 kg 97%	934 kg 93%	900 kg 90%	866 kg 87%
32°C	934 kg 93%	900 kg 90%	866 kg 87%	834 kg 83%
43°C	900 kg 90%	866 kg 87%	834 kg 83%	800 kg 80%

Ice production yield

Check the data in the table. Factors such as ambient temperature, water temperature, humidity, and water type—which affect ice capacity and the formation of the ice shapes—should be taken into consideration. Approximate values are provided; they may vary.

11. SMART CONTROLLER AND DISPLAY SETTINGS

Code	Setting	Unit	Range
L	Ice-Making Time (excluding pre-cooling)	min	0–30
P	Drain Cycle	—	0–10
A	Drain Time	sec	05–50
J	Water Inlet Valve Delay	min	0–20



After changing settings, wait 10 seconds. The controller saves the data automatically and exits the setting screen.

1. Ice-Making Process

When the Power button is pressed, the defrost valve opens for ice release. The water inlet valve, water pump, condenser fan and compressor enter their programmed sequence. The compressor starts after 30 seconds; the defrost valve closes after 35 seconds; the water inlet valve and water pump start after 65 seconds; and the inlet valve closes after 365 seconds.

If pre-cooling exceeds 15 minutes or the water-channel temperature falls below 3°C, the ice-making compensation period begins.

During this mode: press Power to enter shutdown mode; press Clean to begin cleaning after the harvest process; press Mode once to start a 30-second water-drain decision countdown or twice to enter harvest mode; hold Ice Thickness for more than 5 seconds to enter setting mode, then use Mode to change setting items.

2. Ice Harvest Process

When ice making is complete, the compressor continues running, the defrost valve opens, the water pump and condenser fan stop, and the inlet valve remains in standby. Maximum harvest time is 6 minutes.

If ice does not fall within 5 minutes, the inlet valve and water pump run for 1 minute. If ice still does not fall, the machine returns to ice making. After three consecutive failed harvest attempts, an overtime shutdown occurs.

3. Full Ice Bin

If the bin is full after harvest, the water pump, compressor, defrost valve, inlet valve and condenser fan stop. Ice making resumes 180 seconds after enough ice has been removed. If no ice is removed, the full-bin shutdown remains active.

4. Overtime Shutdown

After three consecutive harvest failures, all components stop. Ice making restarts after 45 minutes.

5. No-Water Shutdown

If water is continuously unavailable for 5 minutes, all components stop. Only the inlet valve operates for 30 seconds every 4 minutes. Ice making resumes when water supply returns.

6. High-Temperature Shutdown

If condenser temperature exceeds 40°C, all components stop and only the condenser fan continues for 3 minutes. Ice making restarts after 45 minutes.

12. ERROR CODES

Code	Name	Description
E01	Condenser temperature sensor fault	Condenser fan runs continuously during ice making and stops during harvest.
E02	Water temperature sensor fault	Ice-making compensation period starts after pre-cooling.
E03	Overtime shutdown	See Section 4
E04	No-water shutdown	See Section 5
E05	High-temperature shutdown	See Section 6
E06	High-pressure shutdown	Ice making restarts after 45 minutes.
E07	Full-bin shutdown	See Section 3

Note: The ice-making time consists of the pre-cooling period, normal ice-making period and ice-making compensation period.