# **OPERATION & INSTALLATION MANUAL**

# FRANKE EcO₃Ice<sup>™</sup> - ANTIMICROBIAL ICE PROTECTION

FOR COMMERCIAL ICE MACHINES





# **IMPORTANT!**

Before initial use, the instructions on operating safety, use, and maintenance must be read carefully and understood. Keep the user manual in the vicinity of the  $EcO_3$  lce Device for later reference.

#### 1.1 SYMBOLS FROM THE USER MANUAL



#### WARNING!

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



#### CAUTION!

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



### IMPORTANT!

Important information can be found here.

### 1.2 USER AND DEVICE SAFETY

The Franke  $EcO_3$  lce device should be installed according to the guidelines described in this manual. This manual provides general guidance for safe use, but it is not a substitute for determining additional site-specific safety procedures.

#### A. Read This Manual



#### **IMPORTANT!**

Failure to comply with the safety precautions or warnings indicated in this manual violates the safety standards that form a part of the intended use of this equipment. The manufacturer assumes no liability for the user's failure to comply with these requirements. This manual must be read and understood prior to installing or servicing this device. Keep this manual available for future reference. The  $EcO_3$  lce device must be installed and serviced by qualified and properly trained personnel. It is the responsibility of the user to ensure that only properly trained personnel install and maintain the  $EcO_3$  lce device.

#### B. Electrical Hazards

The device is powered by a 24 Volt, 1.25 Amp transformer that ships with the product and can be directly connected to a 100-240 VAC 50/60 Hz, 1.0 Amp power source.



#### WARNING! SHOCK HAZARD!

Always disconnect power before servicing the Franke EcO<sub>3</sub>Ice Device or changing the replaceable cartridge.

#### C. Ozone (O<sub>3</sub>) Hazards

This  $EcO_3$  lce device generates dissolved ozone (O<sub>3</sub>) from water. Under normal operation, the  $EcO_3$  lce device does not produce sufficient O<sub>3</sub> in the form of gas to create a hazardous condition. The characteristics of ozone gas, in excessive quantities, are as follows: It is toxic, it is corrosive, it accelerates burning, it is heavier than air and oxygen, it has an acrid odor, and it is unstable. It is the operator's responsibility to follow all relevant national and local codes and regulations, and to ensure that the device is installed and serviced by trained personnel.

 $O_3$  gas can be detected by humans (by smell) at a level as low as 0.003 parts-per-million (ppm), the odor threshold.



#### CAUTION!

There is a risk of respiratory irritation from ozone gas if safety procedures are not followed. Never attach  $EcO_3$  lee to any water line other than one dedicated to an ice machine with the appropriate flow rates. (See model specific water flow rates in Section 5.2 or Table 1 in Section 3.) **NOTE:** Some ice machines include built-in drinking water dispensers. EcO<sub>3</sub>lce should not be installed on these machines unless ice making is fed by dedicated water line separate from drinking water.

#### D. O<sub>3</sub> Regulations

Occupational Safety and Health Administration (OSHA) limits for  $O_3$  are as follows:

#### **OSHA Ozone Exposure Limits:**

- Long term exposure limit: 0.10 ppm for 8 hours
- Mid term exposure limit: 0.20 ppm for 2 hours
- Short term exposure limit: 0.30 ppm for 15 minutes

The  $EcO_3$  lce device is designed to produce  $O_3$  gas below the listed limits when installed, used, and maintained correctly.

#### E. Ozone Generator Safety

The  $EcO_3$  lce device must only be operated in areas with proper ventilation and in conformance with all local and national regulations.

Access to the  $EcO_3$  lce device should be limited to authorized and trained personnel only.

#### F. Ice Machine Cleaning, Sanitizing, Descaling Safety



#### **CAUTION!**

Always disconnect (by unplugging from electrical outlet) power from the  $EcO_3$  device before beginning an ice machine cleaning, sanitizing, or descaling cycle. After the cycle is complete, restore power to the  $EcO_3$  device.

#### G. Maintain Device Labels



#### CAUTION!

Do not, under any circumstances, remove any warning labels or other labels from device.

#### 1.3 CARE AND CAUTION



The  $EcO_3$  lce device should be installed according to the guidelines described in this manual. The device is intended for commercial use. It is designed for safe operation when used as directed.

The following general safety precautions provide guidance for safe use. Failure to comply with the safety precautions or warnings indicated in this manual violates the safety standards of this equipment. The manufacturer assumes no liability for the user's failure to comply with these instructions. The guidelines provide guidance for safe use but are not a substitute for determining additional sitespecific safety procedures.

- Use only Franke original equipment manufactured parts and cartridges.
- Do not immerse device in water.
- Clean exterior of device with soft cloth; do not use harsh or abrasive cleaners.
- Always remove power from device before servicing or replacing cartridge.
- Always shut off water before servicing or replacing cartridge.
- Use only with supplied power cord or other authorized accessories or parts.
- Do not open sealed components.
- If overly strong odor of ozone is detected, disconnect device from power, and verify proper operation of ventilation system. If there is proper ventilation, or if problem persists, please contact Franke for support at 1-800-537-2653, option 2.
- If respiratory irritation is experienced, seek fresh air immediately. Seek medical attention if necessary.
  Disconnect power from device and please contact
  Franke for support at 1-800-537-2653, option 2.
- Do not expose device to extreme heat or open flame.
- Keep out of reach of children.
- Always unplug the EcO<sub>3</sub>Ice device before beginning an ice machine cleaning, sanitizing, or descaling cycle. Plug in the EcO<sub>3</sub>Ice device when the cycle is complete.
- Under certain conditions, iron and manganese in the supply water may cause harmless discoloration of internal plastic ice machine parts. If this condition arises, additional water filtration may be required.

#### 2.1 OVERVIEW

The compact Franke  $EcO_3$  lce device can reduce costly commercial ice machine maintenance and significantly improve food safety as it slows the growth of common bacteria, mold, and yeast. A diamond-based electrolytic cell generates ozone in the water line to help keep the ice-making path and holding bin cleaner for significantly longer periods of time without harsh chemicals. The  $EcO_3$  lce device, comprised of a fixed head and a replaceable cartridge, easily attaches to the water line of commercial ice machines. Its highly efficient process generates just the right amount of ozone and remains well within OSHA Permissible Exposure Limits (PEL) for human safety.

Ozone, a naturally strong oxidant and sanitizer, is 'generally recognized as safe' (GRAS) by the FDA and approved for use on organic foods.

This manual provides basic safety, installation, operation, and maintenance instructions for Franke EcO<sub>3</sub>lce.

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# **3 TECHNICAL DATA**

**4 DESCRIPTION** 

Specification	Model X4 (fits most cube machines)	Model X16 (fits most high flow cube machines)	
Dimensions	3.8 in x 8.0 in x 3.6 in (overall) 97mm x 203mm x 91mm(overall) 3.08 in x 2.39 in (mounting plate hole pattern) 78mm x 61mm (mounting plate hole pattern)	6.0 in x 9.4 in x 3.7 in (overall) 152mm x 238mm x 94mm (overall) 3.0 in (mounting plate hole pattern) 76mm (mounting plate hole pattern)	
Electrical	100-240 V, 50/60 Hz supply to power 24 V, 1.25 A transformer (Integrated into power cord) Cord and plug are included.		
Water Temp	40°F to 86°F (4°C to 30°C)		
Water Quality	Clean, Potable Water Only (recommended hardness ≤300 ppm CaCO3)		
Water Pressure	*min 20 psi max 125 psi *min (1.37 bar) max (8.62 bar)		
Water Flow	0.34 gpm - 1.3 gpm (1.3 lpm - 4.9 lpm)	1.3 gpm – 4.2 gpm (4.9 lpm - 16 lpm)	
Ambient Air	40°F to 100°F (4°C to 38°C)		
Certifications	CE, TUV, ETL, Sanitation (to NSF 2 & 61 & 372) RoHS, WEEE		
USEPA EST. NO. 089373-MA-001 Table 1			

\* Assumes minimum flow rate to operate the device is provided. If device fails to turn on, verify water flow is greater than the minimum required by disconnecting water supply and measuring volumetrically. The flow into the EcO<sub>3</sub>lce must be greater than the minimum in order to activate the internal flow meter.



#### 5.1 PRIOR TO INSTALLATION

- The EcO<sub>3</sub>lce device must be installed with adequate back-flow prevention (installed by others) to comply with applicable federal, state, and local codes.
- 2. Connect only one (1) ice machine per  $EcO_3$  lce device.
  - a. Connect the EcO₃lce device ONLY to an commercial ice machine.
  - b. Never connect EcO<sub>3</sub>Ice to a beverage dispenser water line or water dispenser water line.
  - c. Before installing, confirm that the ice machine that EcO<sub>3</sub>lce is being has the correspondingly appropriate flow rate. (See model specific water flow rates in Section 5.2 or Table 1 in Section 3.)
- 3. Maintain water flow rate. Scale-prohibiting filters can get clogged in less than two months in locations where ice production is low. If installed as a pre-filter to the EcO<sub>3</sub>lce, a clogged filter can reduce water pressure which could result in a flow rate below the minimum required. (See model specific water flow rates in Section 5.2 or Table 1 in Section 3.)
- For best results, clean the ice machine thoroughly before installing the EcO₃lce device.
- 5. It is also recommended that all ice bins and dispensers be cleaned prior to installation.
- 6. Determine a suitable location to mount EcO<sub>3</sub>lce using the following guidelines.
  - a. Locate EcO<sub>3</sub>lce as close to the ice machine water inlet as possible, preferably within 3'.
  - b. Position EcO<sub>3</sub>Ice so that the top of the blue head is visible for inspection of the LED indicator lights.
  - c. Position  $EcO_3$  lce so that the cartridge is accessible for changing.
  - d. Ensure that the device is installed in a protected location, close to the ice machine. The device may crack and leak if other equipment is pushed against it. If water lines are strained, the push/pull fittings may leak.
- 7. Turn water and power off to the ice machine.
- 8. For water-cooled ice machines, only connect the EcO<sub>3</sub>lce to the ice machine water line, NOT the condenser cooling water line.

#### 5.2 MODEL SPECIFIC WATER FLOW RATES

EcO<sub>3</sub>lce model X4 works with cube-style ice machines with incoming water flow rate of 0.34gpm - 1.3gpm (1.3lpm - 4.9lpm)

EcO<sub>3</sub>lce model X16 works with high-flow cube ice machines with incoming water flow rate of 1.3gpm - 4.2gpm (4.9lpm -16lpm)

#### 5.3 MOUNTING AND ASSEMBLY

- Once an appropriate location is determined, mount EcO<sub>3</sub>lce by securing the mounting plate, on the back of the blue head, by using appropriate mounting hardware. (Not provided.)
  - a. EcO<sub>3</sub>lce must be installed upright, with LED indicator lights facing upward. EcO<sub>3</sub>lce must be installed downstream of any filtration or water softening devices. EcO<sub>3</sub>lce should be the last installed device before the ice machine water inlet. (See Fig. 3)



- b. A water shut-off valve should be installed, if not already, upstream of the EcO<sub>3</sub>lce, in close proximity to the device. The water valve will need to be turned off when replacing the cartridge.
- 2. Install the cartridge into the head as follows: Hold the head steady and then push the cartridge up into the head and twist to seat. (See Fig. 4)



3. Place orange "IMPORTANT!" sticker behind front cover, near power switch, in a prominent place so it can be easily seen when machine is shut down for cleaning, sanitizing, or descaling. (See Fig. 5)

#### **IMPORTANT!**

Always unplug the  $EcO_3Ice$  unit before ice machine cleaning, sanitizing, or descaling. Plug in the unit when the cycle is complete.



Fig. 5

#### 5.4 WATER CONNECTIONS

The  $EcO_3$  lce model X4 utilizes 3/8" push/pull fittings and will accept 3/8" OD beverage grade tubing.  $EcO_3$  lce model X16 utilizes 1/2" push/ pull fittings and accepts 1/2" OD beverage grade tubing.

- **NOTE:** Additional fittings and tubing, not provided with EcO<sub>3</sub>lce, may be needed to mate with the EcO<sub>3</sub>lce connections depending on the existing ice machine and water supply connection.
- 1. Cut into the existing water line feeding the ice machine and connect to the water "IN" side of the device.
  - a. The water inlet to EcO<sub>3</sub>lce model X4 is designed for 3/8" OD tubing. (See Fig. 6)
  - b. The water inlet for EcO<sub>3</sub>Ice model X16 is designed for 1/2" OD tubing. (See Fig. 7)
- 2. Using a new piece of beverage grade tubing of the appropriate size, connect to the water "OUT" side of the device. (See Fig. 6)



- a. If a soldered copper line exists at inlet of ice machine, remove as much copper as possible up to the ice machine inlet.
- b. Use only ozone-compatible plastic tubing, such as PTFE or PVDF, on the "OUT" side of the  $EcO_3Ice$ .
- c. DO NOT connect the "OUT" side of  $EcO_3Ice$  to more than one (1) ice machine.
- d. Tubing between the "OUT" side of the EcO<sub>3</sub>Ice and the water inlet of the ice machine can become darkened over time with a film that is caused by the oxidation of iron and manganese in the water. Use of opaque, or slightly colored, tubing is recommended.

#### 5.5 START-UP

- Open water valve allowing water to flow through the EcO<sub>3</sub>Ice device.
  - a. Inspect ALL water connections for leaks.
- Plug EcO<sub>3</sub>Ice into nearest appropriately rated electrical outlet.
- 3. EcO<sub>3</sub>lce is working correctly if the green LED indicator light is illuminated at all times when plugged in.

# **6 OPERATING INSTRUCTIONS**

#### 6.1 OPERATION

Once installed and operating, the device automatically inhibits bacteria/bio-film growth. A small amount of ozone enters ice machine with each ice-making cycle.

Before beginning an ice machine cleaning, sanitizing, or descaling cycle, always remove power from the  $EcO_3$  lce device. When the cycle is complete, restore power to the  $EcO_3$  lce device.

#### 6.2 INSPECTION OF CARTRIDGE LIFE

The  $EcO_3$  lce replaceable cartridge is designed to last approximately twelve (12) months on 100 to 1300 lbs. ice machines and approximately six (6) months on larger than 1300 lbs. ice machines. When the cartridge is installed, the installation date should be recorded on the cartridge label. (See Fig. 8)



Factors, such as hard water, may shorten cartridge life. For this reason, there are two (2) "Replace Cartridge" LED lights. (See Table 2 & Fig. 9)

The  $EcO_3$  lce cartridge should be replaced at the six (6) or twelve (12) month interval, depending on the ice machine size or when the yellow "Replace Cartridge SOON " LED light is lit, <u>whichever comes first</u>. (See Table 2 & Fig. 9)

Condition	Action	
Green "POWER" light lit	Device is operating. No action required.	
Yellow "REPLACE CARTRIDGE SOON" light lit	Cartridge efficiency is diminished. Replace cartridge as soon as possible.	
Red "REPLACE CARTRIDGE NOW" light lit	Cartridge has expired and is no longer producing ozone. Replace cartridge immediately.	

Table 2



#### 6.3 CARTRIDGE REPLACEMENT

- Disconnect power from the EcO<sub>3</sub>lce device by removing plug from the electrical outlet.
- 2. Very Important: Turn off water flow to the device using the water shut-off valve.
- To remove the cartridge, hold the head steady, and then twist the replaceable cartridge and pull down. (See Fig. 10)
- 4. To install the new cartridge, hold the head steady and then push the cartridge up into the head and twist to seat. (See Fig. 11)



a. The alignment marks on the head and cartridge should align when correctly installed. (See Fig. 12)



- 5. Turn water flow on to the device, and inspect for leaks.
- 6. Restore power to The EcO<sub>3</sub>lce by plugging device into electrical outlet.

Prior to troubleshooting, check the condition of the LED indicator lights on top of the EcO<sub>3</sub>lce device. (See Fig. 13 & 14)





Fig. 13

LED Color & State	Status	How to Fix
Green (solid)	Power ON.	N/A - Device is operating properly.
Yellow (flashing)	Cartridge has reached end of life.	Replace the cartridge as soon as possible.
Red (solid)	Cartridge has expired.	Replace the cartridge now.
Yellow (solid) + Red (flashing)	Service is required.	Cycle power and replace cartridge. If error persists, contact Franke for support. Device is not generating ozone.
Yellow (flashing) + Red (solid)	Cartridge has stopped functioning or is installed incorrectly.	Replace cartridge. If cartridge has just been replaced, remove and reinstall to ensure correct installation. Then, cycle power. If error persists, contact Franke for support.
Yellow (flashing) + Red (flashing)	Ozone time-out Water leak	Fix leak and cycle power. Device shuts off.

Table 3

## FOR SUPPORT CALL FRANKE AT 1-800-537-2653, OPTION 2

When calling for support, please have the model number available. The model number is either the first two (2) digits (X4) or first three (3) digits (X16) of the serial number, located on the top of the device. (See Fig. 14)

# 8 **DISPOSAL**



Special regulations apply when disposing of used electrical appliances.

The customer assumes responsibility for proper disposal of the delivered product after the end of its service life at the customer's own expense, in accordance with legal regulations.

# 9 LIMITED WARRANTY

Franke Foodservice Solutions ("Franke") warrants new equipment manufactured in Franke's designated facilities to be free of defects due to poor materials or workmanship for the period of time listed below (following the date of original installation):

- EcO<sub>3</sub>lce head 1 year parts only
- EcO<sub>3</sub>lce cartridge 30 days parts only

Exclusions: Certain Franke parts that are expendable by nature and that need to be replaced frequently may not be covered. Franke is not liable under these warranties for repairs or damages due to improper operation, attempted repairs or installation by unauthorized persons, alterations, abuse, fire, flood, or acts of nature.

Additionally, this warranty may be voided in the case of:

- Failure to follow Franke instructions for use, care, or maintenance
- Removal, alteration, or defacing of the Franke-affixed serial number and other labels
- Mechanical damage
- Use of fluids other than clean, potable water

This warranty is conditional upon Franke receiving notice of any defect subject to this warranty within thirty (30) days of its original discovery by the Buyer.



For Support, Please Call: Tel +1-800-537-2653, Option 2 (1-800-5-FRANKE, Option 2)

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