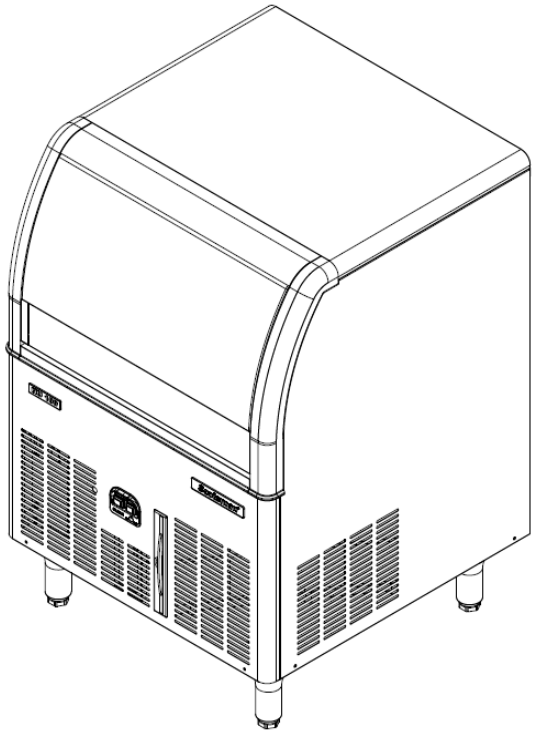
Scotsman®
Ice Systems

USER MANUAL
NU100/150/220/300



Part Number 99300403-01 Version: B

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Preface

Firstly, thank you for choosing our ice maker, we sincerely wish you will use our ice maker for a long time.

Our ice makers are designed by experts in the industry following certain standards and manufactured in a fully controlled process. We believe that our innovative and high quality products will not cause you any harm as long as you install and use our machine according to the manual correctly.

This manual will guide you on how to use our ice maker correctly, how to avoid the machine breakdowns and how to achieve its best performance. Please do not reach into the compressor or evaporator area with your hand so you can avoid touching control and safety devices.

Please read the manual thoroughly, especial the warnings and notices, the machine model and serial number need to be provided when you contact any service provider.

Delivery
Please check the following items when the unit is delivered:

- Whether the packing and exterior of the ice maker is intact.
- Whether the ice maker model is the same as your order.
- Whether the components are in good condition and whether the accessories and documents in the storage bin are complete.
- Whether the interior of the ice maker is undamaged.

If there is serious damage or it lacks parts, please inform your carrier and dealer immediately. What is stated in the manual is general; there could be a slight difference between your unit and the machine supplied. The copyright for the contents of the manual belongs to the manufacturer; please don't duplicate the manual without the manufacturer's written approval. Scotsman will improve the product continuously and reserves the right to change the product without further notice.

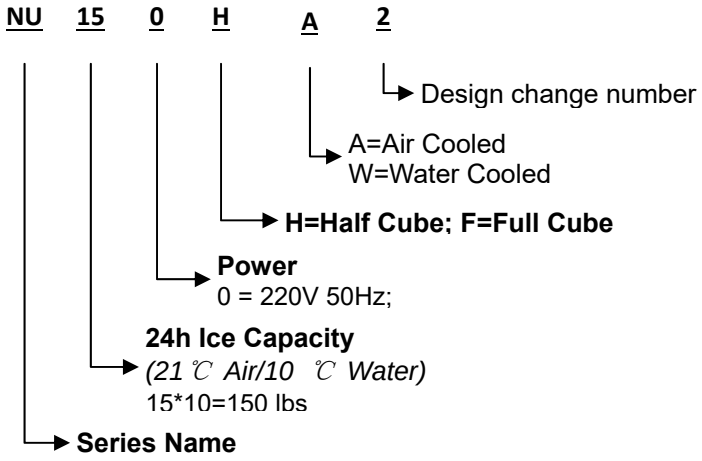
Transportation
Please use a forklift with a fork thickness of less than 40mm to handle the ice maker.

Warranty
Scotsman Ice Systems (Shanghai) Co., Ltd. is responsible for the warranty of the ice maker; please refer to the warranty card for more details.
If the machine is in need of replacement components or parts, we require you to use Scotsman Shanghai company exclusive parts, otherwise the warranty becomes invalid.

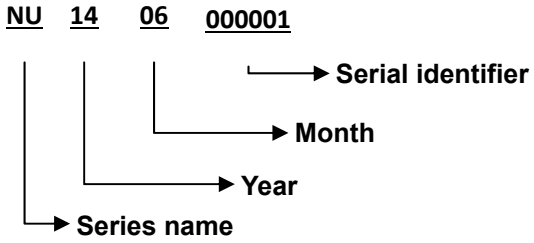
Ice maker model and serial number

Ice maker model

Example：**NU150HA2**



Serial number



The serial number includes 12 digits; the first two letters are the series name, the next two numbers refer to the year the machine was manufactured, then the two digit month codes, the final six digits are the serial identifier.

Summary

The NU100/150/220/300 commercial ice maker in this manual is electronically controlled; it is equipped with an advanced and unique electronic control system, which can control the operation of the ice maker automatically. When the storage bin is full of ice, the ice maker will stop working automatically and restart working again when the bin is no longer full.

Item \ Model			NU100	NU150	NU220	NU300
Capacity (24 hours) ①		[kg]	45	68	100	132
Power		[V/Hz/ ph]	220/50/ 1	220/50/1	220/50/1	220/50/1
(Size)	(width)	mm	600	600	650	650
	(depth)	mm	610	610	690	690
	(height with short foot) (height with high foot)	mm	770 875	770 875	870 976	898 1004
Power cord		[Ø mm^2]	1.5	1.5	1.5	1.5
Power input #		[W]	900	1000	1200	1500
Power consumption ①		[KWh/100lbs]	8	5.6	5.9	6.5
Power consumption ②		[KWh/100lbs]	12.6	8.5	8.5	9
Water consumption ①		[Gal/100lbs]	32	20	19	20
Water consumption ②		[Gal/100lbs]	32	20	19	20
Net weight		[kg]	50	50	62	65
Cooling type			Air	Air	Air	Air
Refrigerant			R404a	R404a	R404a	R404a
Charge			320 g	320 g	360 g	420g

Maximum working condition

① At 21℃ (70℉) ambient temperature/10℃ (50℉) water temperature

② At 32℃ (90℉) ambient temperature/21℃ (70℉) water temperature

Notes: The manufacture reserves the right to change the model or specifications of the product without further notice.

Safety instruction

In order to ensure the machine works normally for a long time, before installation, please read the manual carefully and follow it strictly. The manufacturer is not responsible for any damage or bodily injury due to ignoring the safety instructions. If there is any doubt, please contact the local dealer.

Installation requirements

Please consider the following items in determining the installation location:

- Power source: the power switch for the ice maker should be easily reachable, be sure that the power supply is reliably grounded.

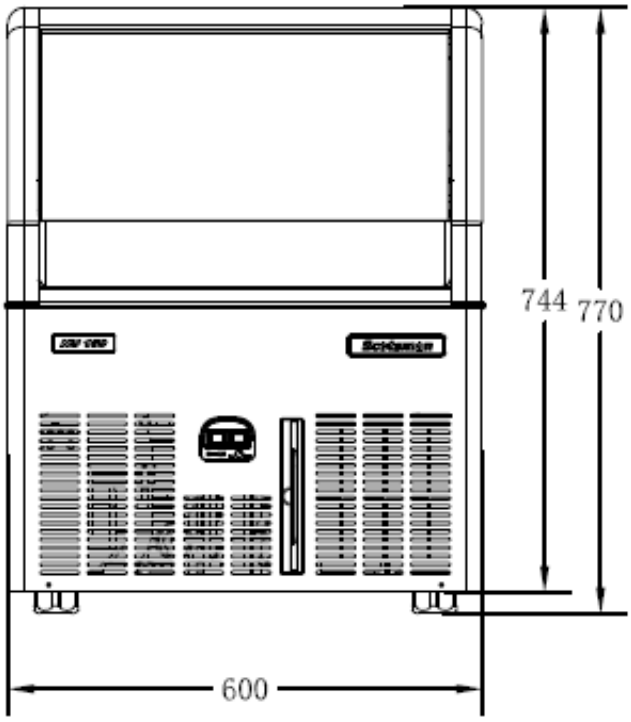
Note：
In order to avoid any hygiene and health safety issues, the water for making ice should be potable. If needed, please install a water filter or water processor.

- Water supply: the water supply switch should be easily reachable.
- Water drain: be sure that the drain pipe extending from the unit has a minimum 3 cm drop per meter.

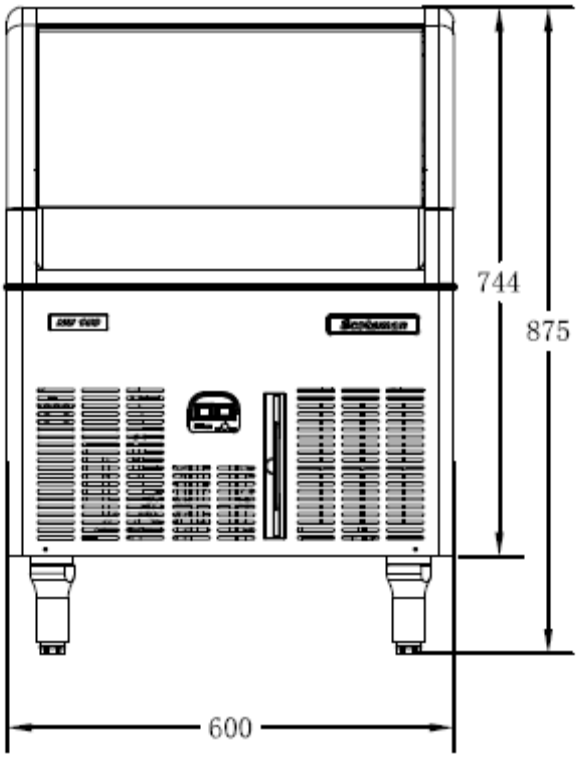
In order to reach its high performance and ensure durability, **please pay attention to the following items:**

- The water temperature should be between 5℃ to 35℃.
- The water pressure should be between 1 bar to 5 bar.
- The power supply should be accordance with the requirements on the nameplate.
- The fuse of the power supply switch should be a bipolar fuse. The gap between the bipolar should be more than 3mm.
- The working ambient temperature should be between 10℃ to 40℃.
- For the required ventilation, the distance between the machine and the wall on the sides and back should be more than 150 mm.
- Be sure the machine is leveled correctly.
- Don’t hang curtains or pile goods around the machine to avoid overheating caused by bad ventilation, be sure there is no heat source (such as a stove, oven, etc.) around the machine and the working environment of the ice maker should not be overly humid。

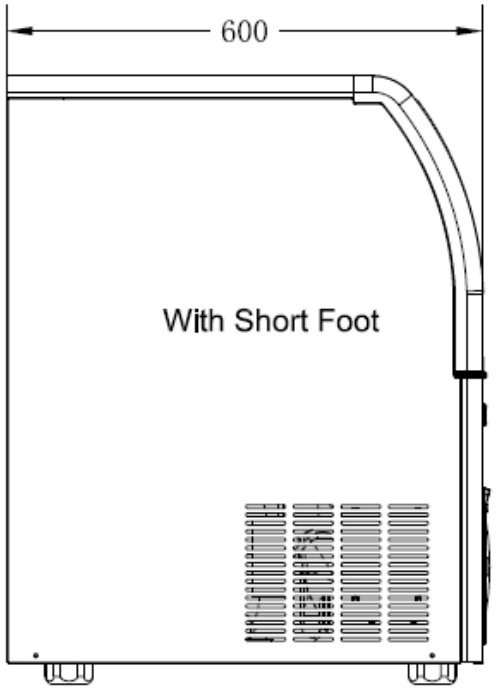
NU100/150 Size

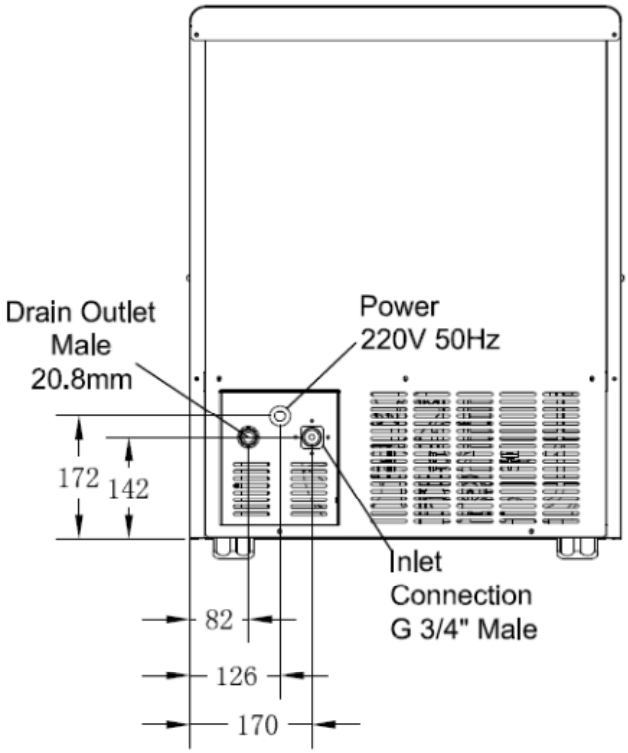


With Short Foot



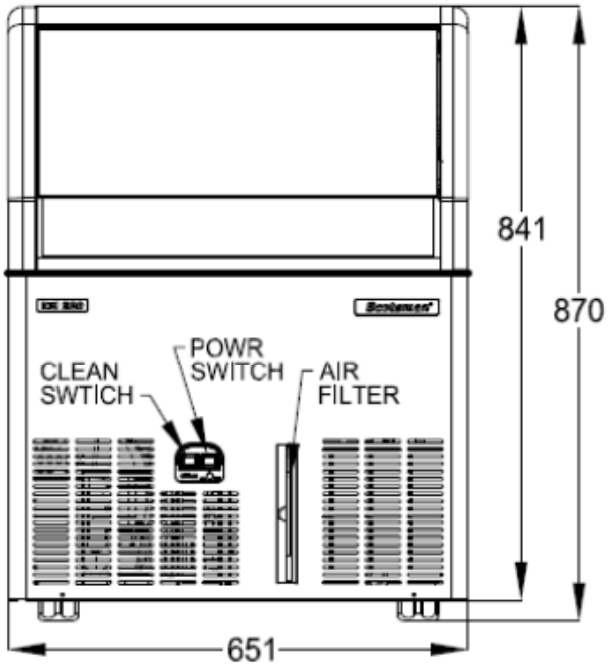
With High Foot



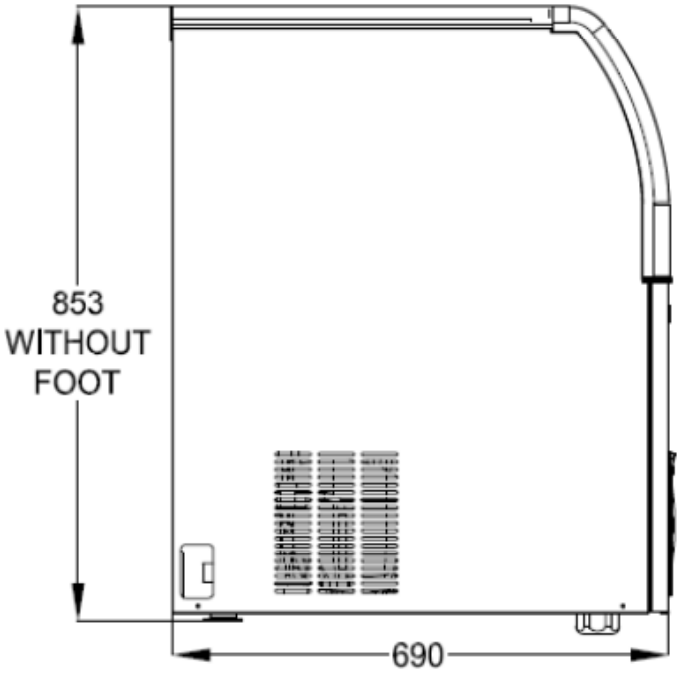


NU220 Size

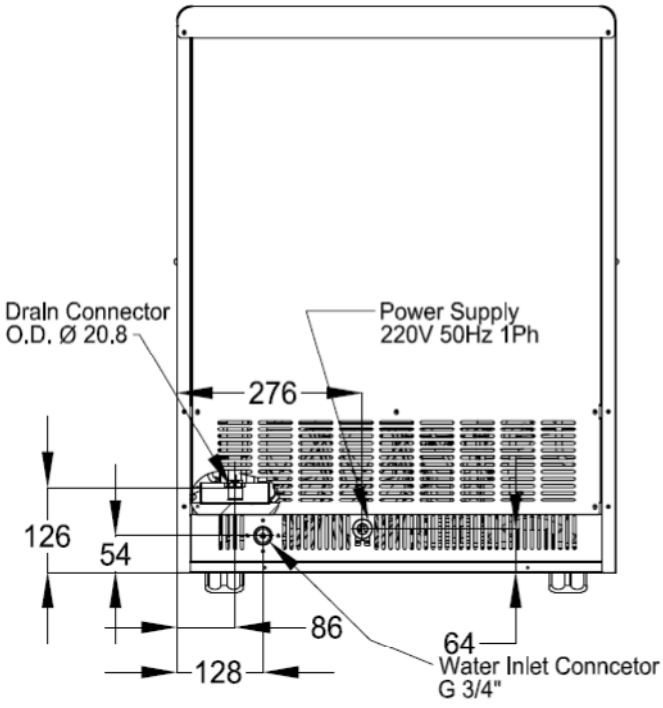
FRONT VIEW



SIDE VIEW

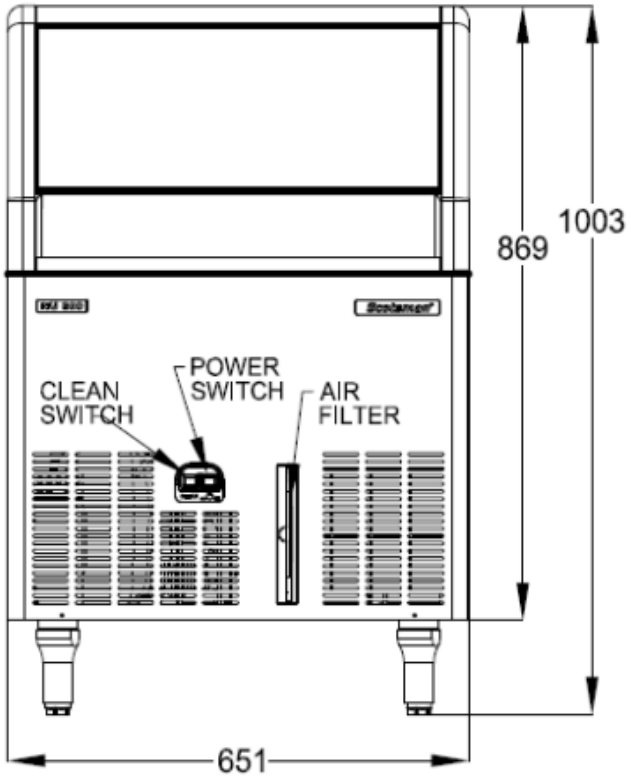


BACK VIEW

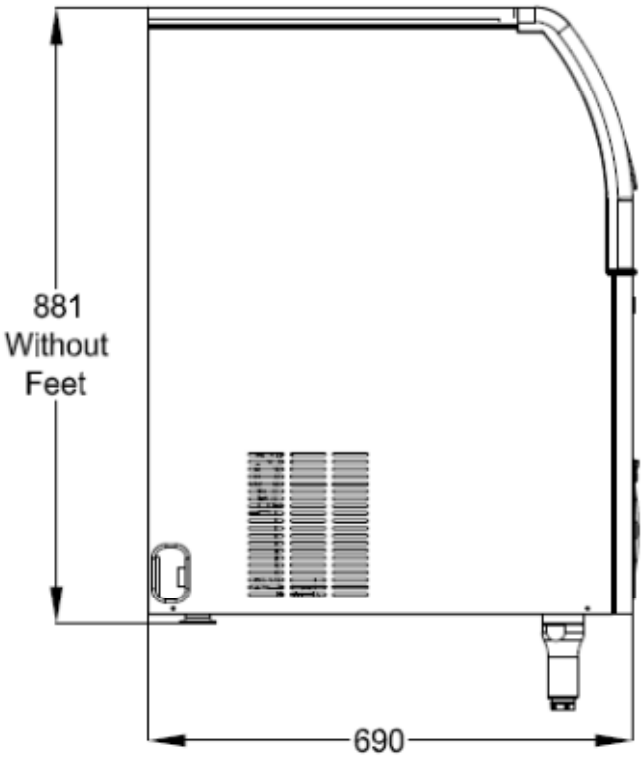


NU300 Size

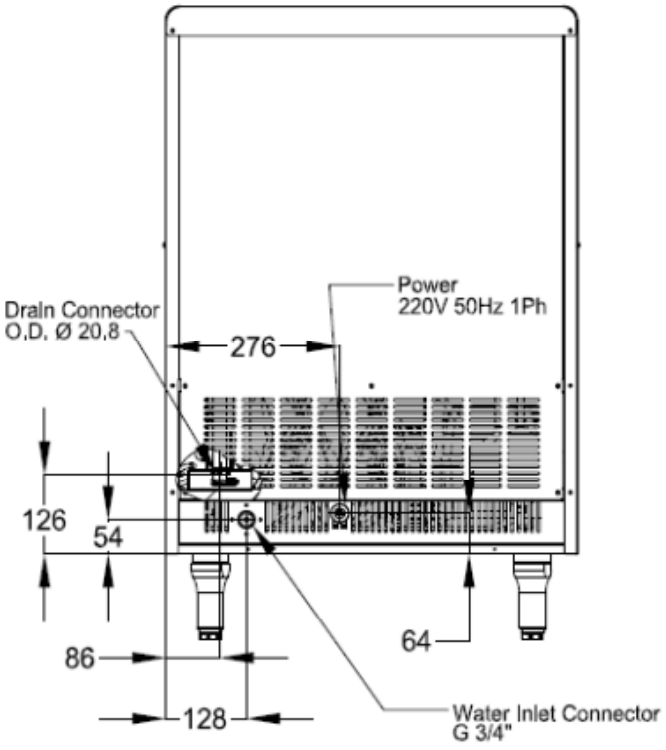
FRONT VIEW



SIDE VIEW



BACK VIEW



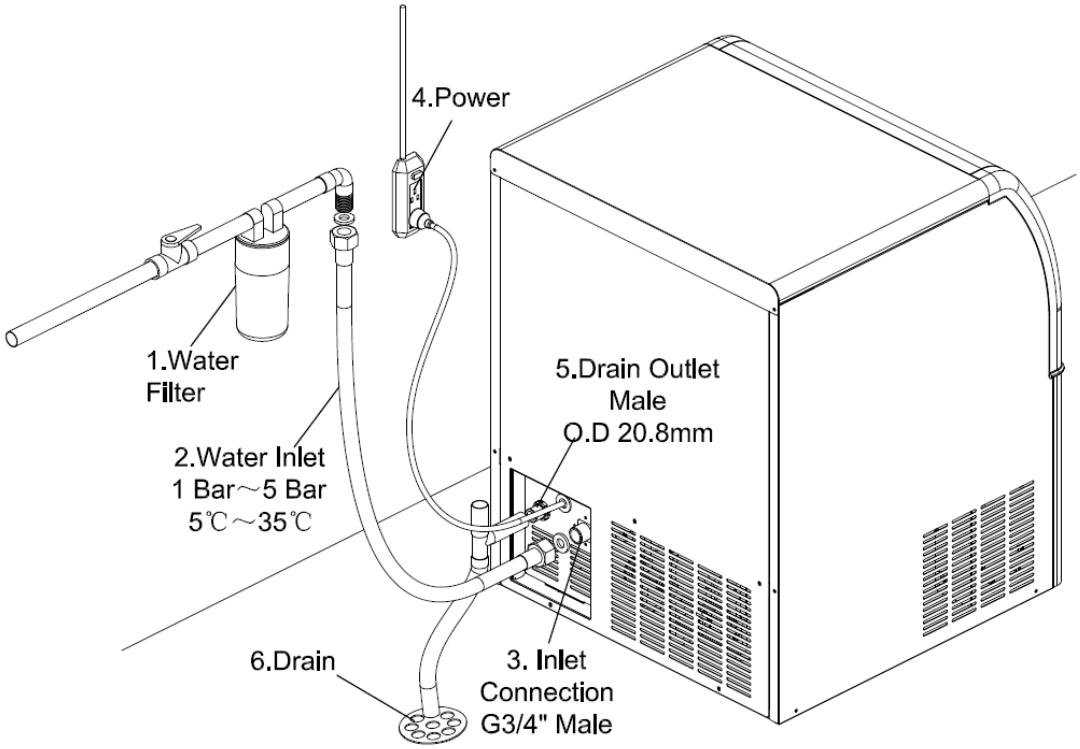
Installation

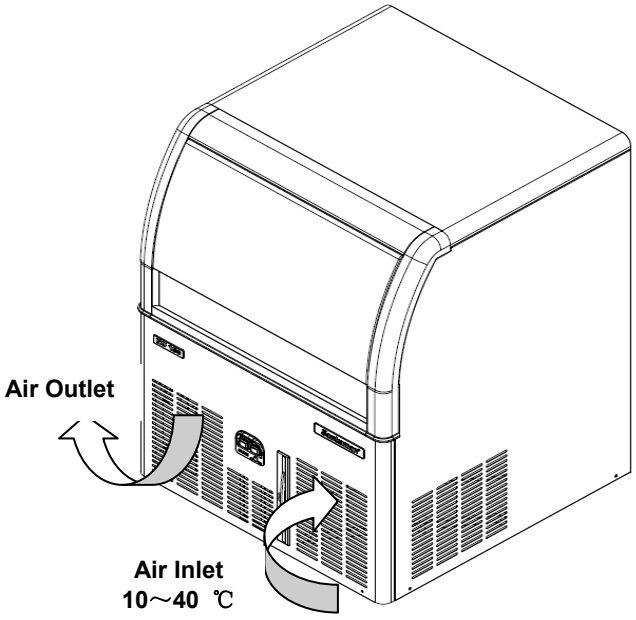
Important：
The ice maker should be installed by an authorized maintenance personnel.

Installation steps:

- Be sure the ice maker is level (level the machine with the supplied legs in the storage bin)
- Connect the water supply with the supplied pipe.
- Set the supplied water drain pipe on the drain outlet; be sure there is a minimum 3 cm drop per meter.
- Turn on the water supply switch.
- Plug the power source plug into the socket.
- Press the power switch button to 'on' position.

(Installation chart)





How the ice maker works

For the NU100/150/220/300 ice maker, the water for making ice is pumped into the spray bar by a water pump. After flowing out of the holes of the spray bar, then it will flow over the surface of the evaporator plate with a constant and even speed. On the evaporator plate, some of the water will turn into ice; the remaining water will flow into to the water trough by gravity and will be re-circulated by the water pump.

Freezing Cycle

The refrigerant gas discharged from the compressor goes into the condenser, where it is cooled and condensed into a liquid. The liquid will flow into the drier filter and then it will pass through the expansion valve. After that, the pressure and temperature of the refrigerant liquid will get much lower.

The refrigerant starts evaporating when it gets into the serpentine pipes on the back of the evaporator plate and cools the water flowing over the front of the evaporator plate.

The refrigerant evaporates in the evaporator; finally, the liquid changes into vapor and then it will be pumped into the compressor where the cycle starts again.

The 30 seconds before the freezing cycle starts is the pre-cooling period, in this period, the compressor is working, water pump is not, the fan is working (controlled by the temperature sensor on the condenser) and water inlet valve is working (controlled by the water-level sensor in the water trough).

The freezing cycle is controlled by the ice thickness sensor, as long as the sensor touches the ice for 30 consecutive seconds, the ice thickness has reached the set point. Then, the freezing cycle ends. The total length of freezing cycle depends on the ambient temperature and ice thickness setting.

Defrosting cycle

As soon as the controller detects the ice thickness has reached the set point, the machine will go into the defrosting cycle.

Hot refrigerant gas discharged from the compressor directly flows into the serpentine pipes of the evaporator, which bypasses the defrost valve.

The refrigerant circulating in the serpentine pipes heats the evaporator plate, which will cause the ice cubes to melt. The ice cubes will separate from the evaporator plate, then fall off and go into the ice chute by gravity, finally going into the storage bin.

When the ice has been harvested, the defrost cycle will end. Then, the hot gas valve and drain valve close (according to the PC board setting); and the unit goes into its new ice making cycle.

General Operating Instruction

Turn on the machine

After the power is switched on, with the three minute water cleaning procedure ends, the ice maker will enter into the ice making cycle automatically; after 20 to 25 minutes, the first batch of ice will fall into the storage bin.

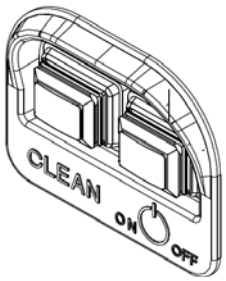
Notes：
If the room temperature is below 15 ℃, the ice making cycle is shorter (about 10 to 15 minutes).
If the room temperature is over 30 ℃, the ice making cycle is longer (about 15 to 30 minutes).

Note:
The machine running noise should be under 70dB.

Before the first ice making cycle, be sure to sanitize the interior of the storage bin with sanitizer, then rinse it with clean water.

Stop the machine

There are two buttons on the NU front panel, the switch on right side is the power switch with which can switch off the power after you press the button.

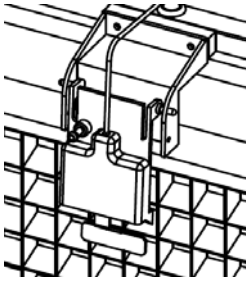


Power Switch Panel

Or you can stop the ice maker by cutting off the circuit breaker.

Ice thickness adjustment

The ice thickness has been adjusted to the optimal level before it was shipped out, if you find that the ice is irregular in your use, you can check whether the ice thickness sensor is too close or too far from the evaporator plate, if needed, adjusts the screw on the sensor properly to achieve the suitable thickness.



Ice thickness sensor

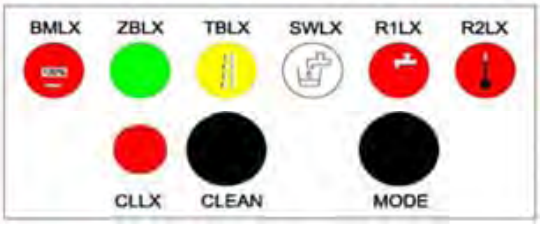
The buttons on the front panel

(see Fig. Power Switch Panel)

There are two switches on the NU front panel: the right green switch is the power switch, the red switch is the cleaning switch.

The lamps on the control box

BMLX—Ice full	ZBLX—Freezing
TBLX—Defrosting	SWLX—Water Supply
R1LX—Water Shortage Alarm	R2LX—High Temperature Alarm
CLLX—Cleaning	CLEAN—Clean button
MODE—Mode Button	



Control Box Panel

Buttons Instruction

- Mode Button Functions

Press the button one time in order, then the machine enters the next step:

Power on - Water Supply – Pre-Cooling – Freezing - Defrosting - Ice Bin Full Detecting

Warning:
Only authorized maintenance people are allowed to press the MODE button.

- The function of the cleaning button

When the power switch is on, the clean button only activates in the first minute. Hold the clean button for five seconds, the ice maker will enter into the cleaning procedure automatically. With Scotsman special cleanser and sanitizer, the ice maker can be better cleaned and sanitized.

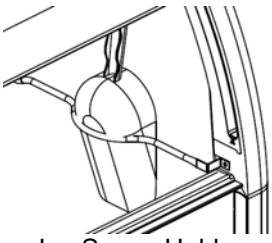
Alarm lamps failure description:

lamps	State	Failure Description
BMLX + R1LX	On	Ice chute failure
ZBLX + R1LX	On	Ice making delayed more than five times in a row
R1LX + R2LX	On	Condenser sensor failure
BMLX + R2LX	On	Ice thickness sensor failure
SWLX + R2LX	On	Water level sensor failure
R1LX	On	Shortage of water
R2LX	On	High temperature alarm
R1LX + R2LX	Blinks	High pressure alarm
TBLX	Blinks	Ice harvest delayed more than three times in a row
SWLX	Slowly Blinks	Water temperature sensor failure

Scheduled Maintenance

In order to prevent bacteria on the ice, **please pay attention to the following items:**

- Don't store any goods in the storage bin.
- Keep the ice scoop clean.
- There is an ice scoop holder designed for holding ice scoop which is located on the right side of the bin.



Ice Scoop Holder

- Keep the storage bin door closed.
- When cleaning the floor around the ice maker. Be sure to prevent the fan motor from sucking in dust.

In order to avoid any damage to the machine, **please pay attention to the following items:**

- Don't cut off the water supply when the machine is running.
- Open or close the door of the storage bin gently, slamming or hitting the door is prohibited.
- In order to avoid bad ventilation or worsening the sanitation, please don't pile any goods on the top or around the machine.

Clean and maintenance

Warning:

- Be sure to cut off the power and water supply before cleaning or servicing the ice maker.
- Keep your hands completely dry.

Notes:

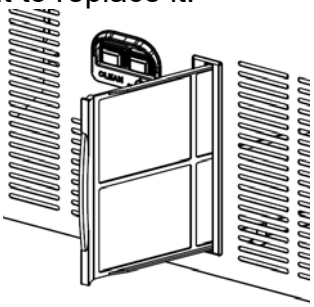
- Don't disassemble any fastened panels.
- Call the authorized service agent to maintain and clean your ice maker.
- Be sure to lift the ice maker when you move the ice maker to avoid damage to the supporting legs.
- Don't push or pull the ice maker.

Clean or replace the air filter

The NU series air cooled ice makers are equipped with an air inlet filter. As the ice maker runs, dust will be sucked into the machine through the filter, thus excessive dust cuts down the air volume to be sucked in as well as the efficiency of the ice maker.

In order to enable the ice maker to work efficiently, be sure to clean the air filter monthly.

If the filter is damaged, call the Scotsman service agent to replace it.



Air filter

Monthly inspection

If the ice cubes are abnormal, please take the spray bar down from over the evaporator; put it in warm water diluted with a neutral de-scaling solvent to wash its surface and spiracles, and then rinse it with clean water.

For ensuring that the ice maker is clean, please wipe the interior of the storage bin with a cleanser diluted in the lightly warm water, then sterilize it with liquid sanitizer, finally rinse it with clean water.

Use a soft cloth and cleanser specially made for stainless steel to clean the panels of the ice maker.

Automatically clean/rinse:

In the first minute after the power is turned on, press the 'clean' button on front panel and hold it for five seconds, then the ice maker enters into the 'wash/rinse' procedure automatically (the whole process will take about 40 minutes). During the process, the 'CLLX' light blinks quickly, at the end of the process, the 'CLLX' light blinks slowly, restart power or press the 'MODE' button and hold for more than five seconds, then the ice maker will enter into the normal ice making cycle.

Cleaning and sanitizing the water system

The sanitation of the water system is very important; it needs to be washed at least twice a year, call an authorized service agent to do it.

We suggest you use the cleanser/sanitizer made specially for ice makers to deal with scale and mineral sediments

Troubleshooting analysis (inspection items to do before calling the service provider)

Important:
- The machine should be maintained by authorized maintenance people.
- If a wire is damaged, in order to avoid danger, call authorized maintenance people to replace it.

Ice maker out of work (all the lamps are not on)
- Whether the manual switch is 'on'?
- Whether the fuse in the fuse box has blown?
- Whether the power plug is plugged in?
- Whether the power switch on the front panel is "on"?

Low ice capacity or low efficiency
- Whether the water supply switch has been switched on?
- Whether the water temperature or ambient temperature is too high?
- Whether there is heat source near the machine or bad ventilation around the machine?

Ice cube shape is poor
- Whether the water supply is sufficient?
- Whether the air filter is blocked?
- Whether some spiracles on the spray bar are blocked?

Symptom	Possible Cause	Suggested Correction
Unit does not run	Abnormal power supply	Check the power supply voltage, if no voltage, check the power line Check the power supply voltage, if it is low, contact the power company
	The fuse on the PC board blew	Replace the fuse. If the fuse is breaks again, check the cause.
	The machine stopped abnormally (such as high temperature protection)	Press the MODE key on the PC board to reset, the machine starts or starts automatically two hours later or unplug the power plug and plug it again three minutes later, the machine starts.
	Bin full	Adjust the position of the ice cubes in the storage bin to let the ice chute reset and then start the machine
	Abnormal water supply	See the processing method for water-shortage
Compressor cycles intermittently	Low voltage	Check circuit for overloading
	Non-condensable gas in system	Check the power supply voltage, if it is low, contact the power company Purge the system and re-charge
	Compressor starting device has loose wires	Check for loose wires in the starting device
	Mechanical problem	Replace compressor
Cubes too small	Ice making cycle too short	Check the distance between the ice thickness sensor and the evaporator plate
	Expansion valve partially blocked	Check the expansion valve, if damaged, replace it
	Moisture in the system	Purge the system and re-charge
	Shortage of water	See the processing method for water-shortage
	Shortage of refrigerant	Check for leaks in the refrigeration system and recharge
Cloudy ice	Shortage of water	See the processing method for water- shortage
	Dirty water supply	Use water softener or a water filter
	Accumulated impurities	Cleaning according to the procedure
	Water temperature sensor failure	Replace the water temperature sensor
Shortage of water	Water spilling out through ice chute	Tighten the screws on the clamping plate of the PVC pipe to reduce the water flow
	Water inlet solenoid valve not opening	Check, if damaged, replace it
	Water leak in water tank	Check for the leaking points and repair them. If necessary, replace it.
	Water inlet valve blocked	Replace the water inlet valve
	Water drain valve leaking	Check, if damaged, replace it

Symptom	Possible Cause	Suggested Correction
Irregular cube sizes and some cloudy cubes	Spray bar blocked	Clean the spray bar
	Shortage of water	See the processing method for water-shortage
	Machine not level	Level the machine as required
	Water temperature sensor failure	Replace the water temperature sensor
Decreased ice capacity	Inefficient compressor	Replace the compressor
	Water valve leak	Check, if damaged, replace it
	Spray pipe blocked	Check, if blocked, clean it.
	Non-condensable gas in system	Vacuum and re-charge
	Bad ventilation	Improve ventilation or put the machine in a good ventilation place
	Too much dust on air filter	Clean the air filter, if needed, replace it.
	Expansion valve partially blocked	Check, if damaged, replace it
	Defrost valve leaking	Change charged volume, release slowly
	Refrigerant over charge Shortage of refrigerant	Vacuum and re-charge according to the nameplate
	Discharge pressure too high or too low	Check for the cause of the incorrect discharge pressure
	Defrost valve blocked or not open	Check, if damaged, replace it
Unit doesn't defrost or no ice	PC board failure	Check, if damaged, replace it
	Defrost valve not opening	Check, if damaged, replace it
	Water inlet solenoid valve not opening	Check, if damaged, replace it
Incorrect discharge pressure	Inoperative condenser sensor	Check, if damaged, replace it
	Too much or too little refrigerant, or non-refrigerant gas was charged	Check whether the refrigeration system is leaking Vacuum and re-charge according to the nameplate and the requirements from Scotsman
	Inoperative PC board	Check, if damaged, replace it
Excessive water at unit base	Water system leak	Check for leaking points and repair them. If necessary, replace it.

WARRANTY CARD

Brand Model	Serial No.
Name	Dealer
Address	Date of Purchase

Notes：
Please keep this card for warranty protection of your system.

WARRANTY CARD (DUPLICATE)

Brand Model	Serial No.
Name	Dealer
Address	Date of Purchase

Notes：
Please return this card to factory for warranty protection.

Customer Signature: _____

Notes:

Scotsman®
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