Aquafog™ 3300

by

CITY THEATRICAL INC

INSTRUCTION MANUAL

SPECIFICATIONS

TANK

Material:	High temperature plastic polymer
Dimensions:	21" x 30" x 38" (including casters) (533 mm x 762 mm x 965 mm)
Water capacity:	28 gallons (106 litres)
Ice capacity:	100 lbs. (45.36 kg.)
Casters:	3" (76 mm) swivel front, 8" (304 mm) fixed
Hose vent:	4" (101.6 mm) molded into tank
Fill Door:	20" x 30" (508 mm x 787.4 mm)
Weight empty:	88 lbs. (39.91 kg.)
Weight fully loaded:	455 lbs. (208.19 kg.)

PUMP

Pump:	Stainless steel 10GPM (37.85 litres/min.)
Fittings:	All stainless steel, brass or high temperature plastics

ELECTRICAL

Voltage:	120v, 220v available
Heating elements:	120v 1650 watt (two) screw in 220v 2000 watt (two) screw in
Thermostat:	Adjustable automatic control (100°F-160°F) (38°C-71°C)
Overtemperature:	175°F (79°C) cutout, manual reset
Low water cutout:	Turns off heaters when water is low
Blower:	240 CFM axial (6.79 CMM)
Circuit breakers-Type:	20 amp on heating elements, 2 amp (lighted) on fan and pump

OPERATING INSTRUCTIONS

Overview of Operation

The AQUAFOG 3300™ uses dry ice to produce a thick low lying fog. The plastic tank holds water which is heated by two 1650 watt heating elements . When the water has reached operating temperature it is pumped via a plumbing system up into a chamber which holds dry ice. The reaction between the hot water and dry ice immediately forms a thick fog. A fan then blows the fog out to the stage through a duct hose.

HEALTH WARNING: DRY ICE FOG CAN CAUSE ASPHYXIATION BY DISPLACING OXYGEN. NEVER BREATH DRY ICE FOG. READ THE FULL "DRY ICE SAFETY" SECTION ON PAGE 5 BEFORE OPERATING. THIS MACHINE USES ELECTRICAL POWER AT COMMERCIALLY AVAILABLE VOLTAGES. THESE VOLTAGES ARE HAZARDOUS TO HUMAN LIFE WHEN DIRECTLY CONTACTED. ONLY TRAINED PERSONNEL SHOULD SERVICE THESE MACHINES. DISCONNECT ALL POWER BEFORE OPENING ANY ELECTRICAL PANELS. THE MACHINES POWER CORDS MUST BE PLUGGED INTO GROUNDED OUTLETS. ONLY GROUNDED EXTENSION CORD MAY BE USED. OPERATION WITHOUT A GROUNDED SYSTEM MAY RESULT IN A HAZARDOUS ELECTRICAL SHOCK.

1. Read all operating and safety instructions before using this machine. The operator of this machine is responsible for the safety of the actors, technicians, audience members, and any other people in the area of use. ***FAILURE TO PROPERLY FOLLOW THESE PRECAUTIONS MAY LEAD TO SERIOUS INJURY.***
2. Place machine where it will be used. Be sure it is on a level spot and block the wheels so that it will not roll when in use. Disconnect all power cords.
3. Fill tank to fill line with plain tap water. The fill line can be viewed by grasping the stainless steel ice shelf at front (hose vent end) of the machine and lifting. Hot water may be used. ***DO NOT ROLL MACHINE WHEN IT IS FULL OF WATER.***
4. Connect 4" duct hose (supplied with the machine) to the hose fitting molded into the tank.
5. Plug heating element "A" and the fan into a 20 ampere circuit. Plug heating element "B" and the pump into a separate 20 ampere circuit. If extension cords must be used be sure they are rated for 20 amperes (#12AWG) and not more than 50 feet in length. ***IF YOUR EXTENSION CORDS BECOME HOT TO THE TOUCH, DISCONTINUE USE IMMEDIATELY.*** NOTE: The pump and fan may be operated remotely by running their cords to a switch box at another location.
6. Turn on the heating element circuit breaker. The yellow "HEATING" light will come on and the water will start to heat. Set the temperature control knob to the desired setting between 100 and 160 degrees. When the water reaches its operating temperature the elements will turn off and the green "WATER READY" light will light. The machine is now ready to operate. See Page 4 for a full explanation of the temperature control system.
7. The stainless steel ice shelf has a sliding door that regulates how fast water drains out of the ice shelf. Keeping this cover closed, covers the ice with the maximum amount of water and makes the most fog. Opening this cover allows the ice shelf to drain faster, producing less fog, but for a longer duration.
8. Release the two lid latches, open the lid and fill the stainless steel ice shelf with dry ice. (See page 5 for dry ice safety). Break up large blocks of dry ice into smaller cube size blocks (wear gloves and safety glasses). Do not overfill with dry ice. Overfilling may cause distortion of the tank and leaking of the lid seals. Close the lid and latch it tightly.
9. When you are ready to make fog, turn on the pump. A few seconds later turn on the fan and fog will be blown out to the stage via your duct hose. When you want to stop making fog, turn off the fan and pump.
10. Check water fill line daily and add water as needed. Change water in your AQUAFOG 3300™ once a week. ***ALLOW TANK TO COOL BEFORE DRAINING.*** To drain, first disconnect all electrical cables, then drain the tank by attaching a garden hose to the drain fitting located at the rear of the tank. Any remaining small amount water can be drained by carefully tipping the machine down and allowing the water to drain out of the hose vent. ***NEVER ATTEMPT TO DRAIN A FULL TANK BY TIPPING OVER THE TANK. SERIOUS INJURY AND DAMAGE TO THE TANK AND ITS ELECTRICAL COMPONENTS MAY OCCUR.*** Rinse out the inside of the tank with fresh water and allow to dry when not in use.

CONTROL PANEL

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CONTROL PANEL

The AQUAFOG 3300™ utilizes a sophisticated temperature control system. Once you set your operating temperature it will be held at that level throughout your entire day of rehearsals and performances. Please refer to the control panel diagram for the location of the following controls:

A MAIN CIRCUIT BREAKER (20 ampere): Controls power to heating elements and temperature control system.

B FAN CIRCUIT BREAKER (2 ampere): Controls power to fan.

C PUMP CIRCUIT BREAKER (2 ampere): Controls power to pump.

D READY LIGHT: This light is green when operating water temperature has been reached.

E HEATING LIGHT: This light is yellow when elements are on and water temperature is rising to level set with temperature selector knob.

F LOW WATER LIGHT: This light is red when the water level of the tank is below the minimum operating level. The heating elements will not operate. To add water, disconnect all electrical cables, open lid, and carefully add water until the level reaches the fill line inside of the tank.

G ELEMENT "A" LIGHT: This light is red if no power is sensed passing through Element "A" (bottom element). The most likely cause is that the element has burned out and needs replacement.

H ELEMENT "B" LIGHT: This light is red if no power is sensed passing through Element "B" (top element). Either the element is burned out, the power cord for Element "B" is not connected or the power source has been lost (check circuit breaker).

I OVER TEMPERATURE LIGHT: This light is red if there has been a thermostat failure and the backup overtemperature thermostat has been activated. ***DO NOT ATTEMPT TO OPERATE THE MACHINE IN THIS CONDITION. OPERATION OF THE MACHINE WITHOUT TEMPERATURE CONTROL CAN CAUSE FAILURE OF THE PLASTIC TANK.*** Call a City Theatrical service center.

J TEMPERATURE SELECTOR KNOB: The operating temperature selected will be maintained by the temperature control system.

K HEATER A and B : Heating element power inlet. **Note: The power cord for heating element "A" also supplies power to the temperature control system.**

L FAN: Fan power inlet.

M PUMP: Pump power inlet.

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FREQUENTLY ASKED QUESTIONS

Q What is dry ice?
A Dry ice is the solid form of carbon dioxide.

Q Where can I get dry ice?
A Look in the Yellow Pages under "Ice" or "Dry Ice". Many ice companies will deliver ice to you each day as needed. Ask your ice dealer to cut your dry ice into 2" cubes if possible.

Q How can I store dry ice?
A Dry ice can be stored in a cooler or ice chest. Stored ice will evaporate relatively quickly, usually within 48 hours. Do not buy your ice more than one day in advance, and preferably on the day of use.

Q How much ice do I need?
A 50 lb. of dry ice will produce about 10 minutes of fog.

Q Can I run my "AQUAFOG 3300" remotely.
A Yes. The simplest is to leave the fan and pump power switches on the machine in the "ON" position, and control their power cords with a switch box at another location. Also, some dimmers are capable of controlling the pump and fan, consult your dimmer manufacturer.

Q What effect does the temperature of the water have on the fog I make?
A Higher water temperatures will tend to make more fog, but use the ice up faster.

Q How long does the water take to heat up?
A Cold water will take about 2 hours to reach operating temperature.

Q Can I operate the machine with only one heating element?
A Yes, but it must be element "A", since its power cord also powers the temperature control system.

Q Can fog be produced in different colors.
A Yes, by using different color filters in your lighting instruments. Never add any foreign substances to your water

DRY ICE SAFETY

1. Read the "Material Safety Data Sheet" for Carbon Dioxide and the Compressed Gas Association "Guidelines for Oxygen Deficient Atmospheres". Found on page seven.
2. Dry ice is extremely cold, -109 degrees F (-78 degrees C). Avoid contact with skin and eyes; use gloves and safety glasses in handling. Do not ingest. Keep away from children.
3. Dry ice expands as it changes from a solid to a gas. Do not keep in stoppered or tightly closed containers. Store in a safe place away from people. Be sure storage area has adequate ventilation.
4. Dry ice is the solid form of carbon dioxide. Carbon dioxide is 1.5 time as heavy as air and can collect in low lying areas. Carbon dioxide can cause asphyxiation due to lack of oxygen. Never lay down in dry ice fog or any other fog. Always provide adequate ventilation to low lying areas such as basements, trap rooms, and orchestra pits. Provide adequate ventilation in automobiles during transport.
5. People walking in dry ice fog must be instructed to be aware of stairs, obstructions, openings in the stage, etc, which may be obscured by thick fog. Be careful of water vapor condensing on the stage floor.

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MAINTENANCE

1. WARNING: DISCONNECT POWER BEFORE ATTEMPTING ANY MAINTENANCE ON THIS MACHINE. FAILURE TO DO SO MAY RESULT IN ELECTRICAL SHOCK. ELECTRICAL PARTS MUST BE SERVICED ONLY BY TRAINED PERSONAL.
2. Allow water to cool and drain machine before attempting any maintenance.
3. Keep the exterior of the machine clean. Wipe with a clean soft cloth. Do not use solvents or chemicals for cleaning.
4. After each use, clean the stainless ice shelf. Remove any bits of debris, paper, etc.
5. Rinse out the interior of the machine after use and allow to drain. Flush out any small particles which could make their way into the pump.
6. If the machine is to be used for an extend period of time, drain, rinse and refill the tank once each week.
7. If the machine is not to be used for a length of time, drain the tank and allow to dry.

PRODUCTION NOTES

The process of making fog is dependant on many factors including temperature, humidity, and air currents. In general, the more dry ice you use and the more hot water, the more fog you will create. The AQUAFOG 3300 utilizes a sliding door on the side of the ice shelf which regulates the depth of water which covers the dry ice. If you need maximum fog, lock the sliding door in its highest position. If you need fog for a longer duration, run the water temperature at a lower setting and lower the sliding door on the ice shelf to a lower position. This will give slightly less output, but will make the ice last longer. Experimentation will give you the correct combination of temperature and water level to accomplish the effect you are looking for. Always test your fog effects under show conditions.

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FOR MORE INFORMATION ABOUT THIS PRODUCT PLEASE CALL US AT

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