INTRODUCTION

Autoclaves are such a familiar feature in many laboratories that it is easy to forget what hazards they can pose. The autoclave’s job is to render its contents sterile or free of any living organisms. If it fails to do so, serious health hazards can result. The hot, pressurized steam (270° Fahrenheit, 30 pounds per square-inch pressure) that autoclaves generate to do this job makes them serious burn hazards as well. In addition, because conditions created inside steam autoclaves are so extreme, autoclaves can easily malfunction if they are not carefully maintained.
1730M—AT 475-K

CAUTION
DO NOT REACH INTO RUNNING EQUIPMENT

NOTICE
NO FOOD OR DRINK ALLOWED
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

LEVELING
The legs (L) of the autoclave are factory-set for the autoclave to hold a specific amount of water. To level when the autoclave sits on a level surface (D). To check the water-level (E) with the recommended amount of water, pour the water into the chamber. The level must be checked with the indicator groove (I) in front of the handle (K). If necessary, raise the front legs in order to obtain the correct water-level.

MODEL & WATER QUANTITY

<table>
<thead>
<tr>
<th>Model</th>
<th>Water Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700</td>
<td>1.2 liters (2200 ml)</td>
</tr>
<tr>
<td>2340</td>
<td>1.3 liters (2200 ml)</td>
</tr>
<tr>
<td>2540</td>
<td>1.5 liters (2500 ml)</td>
</tr>
<tr>
<td>3340</td>
<td>2.4 liters (7000 ml)</td>
</tr>
<tr>
<td>1050</td>
<td>2.9 liters (8700 ml)</td>
</tr>
<tr>
<td>1575</td>
<td>3.4 liters (10000 ml)</td>
</tr>
</tbody>
</table>

TABLE AUTOCLAVE OPERATION INSTRUCTIONS

1. Fill water reservoir with distilled or demineralized water according to the instructions above.
2. Turn control knob to the FULL position, let water enter the chamber until it reaches the indicator groove (A).
3. Turn control knob to STR position.
4. Load the autoclave.
5. Close the autoclave door.
6. Set the following:
   a) Temperature selector to 250°F (121°C) or 275°F (135°C) or any other temperature between the range of 250°F-275°F (121-135°C).
   b) Timer knob.

AT THE END OF CYCLE

7. When timer reaches 0, turn control knob to EXH1-DRY™. Open the door to remove the instruments.

LIQUID: After step 6 is completed, and the timer reaches 0; leave the valve at the same position. The pressure will decrease slowly. When the pressure reaches 0, the door may be opened.

8. Drying: (if required)
   a) Open the door approximately 1-2 inches, start the drying cycle.
   b) Turn timer knob to 20-30 min. (120°C) Drying Cycle.
   c) When timer reaches 0, turn knob to dry. Light will go off and turn the valve handle to 0.

Warning:
The sterility of instruments processed in water-logged cycles cannot be maintained if exposed to a non-sterile environment.
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

Leveling

The legs (2) of the autoclave are factory set for the autoclave to hold a specific amount of water (see below) when the autoclave stands on a leveled surface (3).

Model & water quantity

Model 2340, 15 ozs (450ml)
Model 1730, 12 ozs (350ml)
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

- To check the water level, fill a beaker (4) with the recommended quantity of water; pour the water in to the chamber. The water must reach the indicator groove (1) in front of the chamber.
- If necessary, raise the front legs in order to obtain the correct water level.
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

Table autoclave operation instructions

1. Fill water reservoir with distilled (mineral free) water according to the instructions above.
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

2. Turn control knob to the FILL position; let water enter the chamber until it reaches the indicator groove (4).
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

- 3. Turn control knob to STE position.
- 4. Load the autoclave.
- 5. Close the autoclave door tightly but do not over tighten.

[Image showing a close-up of the autoclave door with a red circle highlighting a broken gasket and a note indicating a new gasket is needed.]
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

6. Set the following:
   - Temperature selector to 250 °F (121 °C) or 273 °F (134 °C) or any other temperature between the range of 250-273 °F (121-134 °C)
   - Timer knob
   - Main switch to START.
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

- At the end of cycle

- When timer reaches 0, turn control knob to EXH + DRY*. Open the door to unload the instruments.

- *LIQUID: After step 6 is completed, and the timer reaches 0. Leave the valve in the same position. The pressure will decrease slowly. When the pressure reaches 0, the door may be opened.
INSTALLATION AND OPERATION INSTRUCTIONS ON THE AUTOCLAVE

- **Drying** (if required)

- Open the door approximately 1 inch
- Turn timer knob to 20-30 min for the drying cycle.
- When timer reaches 0, turn main switch to STOP and turn the valve handle to 0.

- **Warning**: the sterility of instruments processed in unwrapped cycles cannot be maintained if exposed to a non sterile environment.
AUTOCLAVE SAFETY

- Autoclaves generate extreme heat and high pressure. Users should understand and respect the hazards these can create. Firmly lock autoclave doors and their gaskets in place before you run the autoclave to prevent a sudden release of high-pressure steam.

- Some older autoclaves have little or no heat shielding around the outside. Attach signs warning of “Hot Surfaces, Keep Away” or similar wording on or next to the autoclave to remind people of the hazard. Do not stack or store combustible materials next to an autoclave (cardboard, plastic, volatile or flammable liquids).
AUTOCLAVE SAFETY

- Before using the autoclave, check inside the autoclave for any items left by the previous user that could pose a hazard (e.g. sharps).
- Individual glassware pieces should be within a heat resistant plastic tray on a shelf or rack and never placed directly on the autoclave bottom or floor.
- Make sure the door of the autoclave is fully closed (latched) and the correct cycle has been selected before starting the cycle.
AUTOCLAVE SAFETY

- When operating an autoclave, follow these procedures:
  - 1. Be sure the autoclave or steamer is OFF before opening the door.
  - 2. Be sure the steam pressure is gone before opening the door.
  - 3. Open the door slowly, keeping head, face, and hands away from the opening.
  - 4. Wait at least 30 seconds after opening the door before reaching or looking into the autoclave/steamer.
  - 5. Remove solutions from the autoclave slowly and gently; some solutions can boil over when moved or when exposed to room temperature.
  - 6. Clean up any spills immediately.

Report any malfunctions or accidents immediately.
AUTOCLAVE SAFETY

There is a photo of a US lab after an autoclave explosion.
AUTOCLAVE SAFETY

- Clean up any spills immediately! Especially, if it is acid!
PROTECTIVE CLOTHING

- Use the following protective clothing when operating an autoclave:
  
  1. Lab coat
  2. Wear heat-resistant gloves when opening the autoclave door after a cycle. If there is a sharps hazard (e.g. biological waste), wear heat AND cut resistant gloves. Do not use gloves that are wet or have holes.
  3. Wear safety glass or goggles.
  4. Suitable safety shoes
EMERGENCY TREATMENT

- If you are burned, you can receive treatment at the University Health Service at 740 Ferst Drive. Burns to the face, third-degree burns, or burns over large areas of the body should be treated as emergencies. Call 911, Gatech police 404-894-2500 or our supervisor Dr. Art. Ragauskas 404-894-9701(O), 404-894-4778(F) to get help.

  You can treat minor burns yourself by using the following first aid procedure:

  1. Immerse the burn in cool water immediately. (Do not wait for ice.)
  2. Remove clothing from the burn area.
  3. Keep the injured area in cool water for at least 5 minutes (longer is better).
  4. Any burns to the face or eye or any burns that blister should be seen by a physician.
SAFETY TRAINING

No One can use this equipment until they are trained and have read this document and referenced materials. Reference materials include the Autoclave User Manual and Sign-Off Sheet that are both available at Tyrone Wells’s office (476 J).

You must signoff that you have read, understand, and will abide by the manufacturers recommendations before using the autoclaves.