

SOP: Tuttnauer 3850 ELV Autoclave Operation

Approvals:

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1. Purpose

1.1. Sterilize equipment, instruments, solutions, and biohazardous waste using the Tuttnauer 3850 ELV autoclave.

2. Scope and Applicability

2.1. An autoclave sterilizes materials by means of pressurized steam, generally 15 PSI at 121°C. Items to be autoclaved need to be heat and pressure stable. Items that are damaged by heat or pressure should be sterilized by other methods.

3. Summary of Method

- 3.1. Prepare items to be sterilized.
- 3.2. Load the autoclave.
- 3.3. Select and run a sterilization program.
- 3.4. Open the autoclave and allow load to cool.
- 3.5. Perform a visual inspection and verify the sterilizing indicators.

4. References

4.1. Tuttnauer Operation & Maintenance Manual, Laboratory Vertical Steamer Sterilizers models 2540, 3850, 3870 ELV and 2540, 3850, 3870 ELVC, Cat. No. MAN205-0350001EN Rev G.

5. Definitions:

<i>Autoclave</i>	A device used to sterilize equipment and supplies by subjecting them to high pressure steam.
<i>Heat-labile</i>	Susceptible to alteration or destruction by heat.

6. Precautions

- 6.1. Steam from autoclave can cause serious burns. Verify that there is no pressure in the chamber before opening the autoclave door. Wear appropriate personal protective equipment such as eye protection and heat resistant gloves. Keep head and body parts well away from the area above the door. Open the door slowly to allow steam to escape.
- 6.2. Items being autoclaved will be hot after the cycle completes. Wear appropriate personal protective equipment such as eye protection and heat resistant gloves when unloading the autoclave.
- 6.3. When autoclaving liquids, never fill containers with more than 2/3 full.

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7. Responsibilities

- 7.1. It is the responsibility of the course instructor/lab assistant to ensure that this SOP is performed as described and to update the procedure when necessary.
- 7.2. It is the responsibility of the students/technician to follow the SOP as described and to inform the instructor about any deviations or problems that may occur while performing the procedure.

8. Equipment and Materials

- 8.1. Tuttnauer 3850 ELV autoclave
- 8.2. Safety glasses
- 8.3. Heat resistant gloves
- 8.4. Autoclave indicator tape
- 8.5. Aluminum foil
- 8.6. 8 liters laboratory grade water
- 8.7. Items to be sterilized

9. Procedure

9.1. *Preparing items to be sterilized:*

- 9.1.1. Verify that all items are labeled appropriately (for example contents/prep date/initials).
- 9.1.2. Use only heat-proof glass containers for liquids, filled to no more than 2/3 capacity to avoid boil-overs.
- 9.1.3. Loosen all container caps to avoid breakage due to pressure.
- 9.1.4. Plug the opening of media flasks with gauze or cover loosely with aluminum foil.
- 9.1.5. Position empty containers upside down to prevent water from accumulating.
- 9.1.6. Do not mix liquid and non-liquid items in the same load.
- 9.1.7. Do not mix clean and biohazard items in the same load.
- 9.1.8. Place a small piece of autoclave indicator tape on each item.

9.2. *Operating the autoclave:*

- 9.2.1. Open the autoclave door and remove the baskets from the autoclave.
- 9.2.2. Load the baskets with items to be sterilized, which have been prepared per section 9.1 above.
 - 9.2.2.1. Position items so that steam will be able to penetrate.
 - 9.2.2.2. Do not crowd or overload the baskets.
 - 9.2.2.3. Do not exceed 20 liters of liquid or 20 kilograms (44 pounds) of instruments.
- 9.2.3. Inspect the door gasket. The gasket should be clean and smooth. Clean if necessary by wiping the gasket with a soft cloth using water and a mild soap solution.
- 9.2.4. Pour deionized water into the autoclave until the water level rises to the bottom grate.
- 9.2.5. Place the baskets into the autoclave.
- 9.2.6. Turn on the main power switch located at the bottom right corner of the keyboard panel.
- 9.2.7. Close and seal the autoclave door:
 - 9.2.7.1. Carefully lower the door.

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- 9.2.7.2. Lift the tightening bolt into the vertical position, then rotate the handle clockwise until the bolt is hand tight. Do not over-tighten the bolt to avoid damaging the door gasket. Verify that the open door icon disappeared from the main screen and that "READY" is displayed indicating that the door is sealed.
- 9.2.8. Select one of the sterilization programs using the up and down arrow buttons on the top keypad. See Table 1 below for a description of each sterilization program.
- 9.2.9. Start the selected program using the START/STOP button on the top keypad. The door lock should click and the sterilization cycle begins.
- 9.2.10. The buzzer sounds and "CYCLE END" is displayed on the main screen at the end of the sterilization cycle.
- 9.2.11. Don appropriate personal protective equipment, including eye protection and heat resistant gloves.
- 9.2.12. Open the autoclave door:
(Caution: steam from autoclave can cause serious burns. Keep head and body parts well away from the area above the door.)
 - 9.2.12.1. Verify that there is no pressure in the chamber by checking the pressure gauge located on the front.
 - 9.2.12.2. Rotate the handle of the tightening bolt counter-clockwise until it spins loosely, then lower it to the horizontal position.
(Note: a safety device locks the door when the power is off, when a sterilization cycle is in progress, or when a sterilization cycle is stopped due to a failure or manual stop. If the tightening bolt will not rotate, ensure that the power is on and that a sterilization cycle is not in progress, then press the START/STOP key to cancel the door lock.)
 - 9.2.12.3. Open the door just a crack. Allow steam to escape for at least 30 seconds.
 - 9.2.12.4. Lift the door slowly to allow any remaining steam to escape.
- 9.2.13. Remove each of the loaded baskets by the handle from the autoclave carefully. Place loaded baskets in an undisturbed area. Do not touch the sterilized items.
- 9.2.14. Allow the loaded baskets to cool to room temperature.
- 9.2.15. Unload the baskets and perform a visual inspection to verify that the sterilizing indicators changed color and that the load is dry. Tighten container caps.
- 9.2.16. Replace the empty baskets in the autoclave and carefully lower the door. Leave the door unlatched to permit air circulation.
- 9.2.17. Turn off the main power switch located at the bottom right corner of the keyboard panel. Retain the paper printout in order to document the sterilization cycle in a lab notebook.

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10. Attachments:




<i>Program</i>	<i>Screen Icon</i>	<i>Sterilization Phase Time & Temp</i>	<i>Exhaust Phase</i>
Unwrapped Instruments	 (scissors)	4 minutes at 134°C	Rapid
Unwrapped Delicate Instruments	 (empty flask)	20 minutes at 121°C	Rapid
Liquid	 (full flask)	20 minutes at 121°C	Slow

Table 1. Sterilization Programs
 Tuttnauer 3850 ELV Manual

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Figure 1. Tuttnauer 3850 ELV Autoclave (top view)
 Tuttnauer 3850 ELV Manual

11. History

<i>Revision Number</i>	<i>Effective Date</i>	<i>Preparer</i>	<i>Description of Change</i>
0	27NOV13	John Buford	Initial release