STERRAD® 100 Sterilizer
Training Program
for Sterilizer Operation

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Training Program

for Sterilizer Operation

REF 99009

ASP ADVANCED STERILIZATION PRODUCTS

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INTRODUCTION

Behavioral Objectives

A challenging array of decisions confront today's healthcare professionals responsible for or involved in sterilization. These decisions directly impact patient care and the attendant patient outcomes.

This training program has been designed to train competent operators for the STERRAD® 100 Sterilizer.

The components of this program include:
» Training Video
» Program Outline and Instructor's Guide
» Study Guide
» Post Test
» Employee Activities
» Return Demonstrations for verification of competency

Behavioral Objectives

Upon completion of this program the employee will be able to:
1. Identify the steps required for preparing instruments for sterilization.
2. Identify the parts of the STERRAD 100 Sterilizer as listed in this study guide.
3. Identify the information on the printout as pictured in this study guide.
4. Place the packaged supplies in the chamber as described in this study guide.
5. Initiate a sterilization cycle as described in this study guide.
6. Check and insert a new hydrogen peroxide cassette as described in this study guide.
7. Change the used cassette collection box as described in this study guide.

Notes

2 PROGRAM OUTLINE

Readings

Method of Instruction

Demonstration Materials

Demonstrations

Employee Activities

Verification of Competency

Readings
1. Operator's Manual
2. Study Guide

Method of Instruction
1. View Training Video
2. Complete Post Test
3. Perform Demonstrations
4. Complete Employee Activities
5. Verify competency using Return Demonstrations

Demonstration Materials
1. STERRAD® 100 Sterilizer
2. Packaged supplies (as described in this study guide)
3. Paper print-out
4. Cassette collection box
5. Roll of printer paper
6. STERRAD 100 Cassette

Demonstrations
1. Placing wrapped supplies in the chamber of the STERRAD Sterilizer
2. Operating the STERRAD 100 Sterilizer
3. Inserting the hydrogen peroxide cassette
4. Changing the used cassette collection box
5. Changing the printer paper

Employee Activities
1. Complete the Activity Sheets found in this study guide.
2. Practice performing the demonstrated activities.

Verification of Competency
The employee will complete the Employee Activity Sheets and perform without error the Return Demonstrations found in this study guide.

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STUDY GUIDE

Introduction

Preparation
    Cleaning
    Inspection
    Preparation
    Documentation
    Loading the Sterilizer Chamber

The Sterilization Process

The Sterilization Cycle
    Initiation of the Sterilization Cycle
    Completion of the Sterilization Cycle
    Removing Sterile Items

Recommended Procedures
    Inserting the Hydrogen Peroxide Cassette
    Changing the Cassette Collection Box
    Canceled Cycles
    Cleaning the Fixed Injector Valve Vaporizer Cap
    Cleaning the Removable Injector Valve Vaporizer Cap
    Changing a Single Roll of Printer Paper
    Changing a Double Roll of Printer Paper
    Replacing the Printer Ribbon
    Replacing the Printer Cartridge
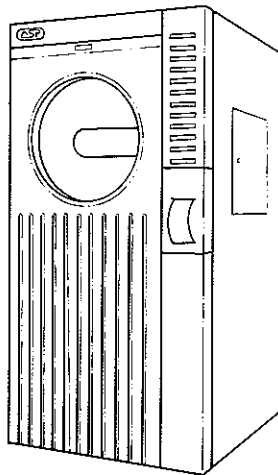   Resetting the Time and Date

Introduction

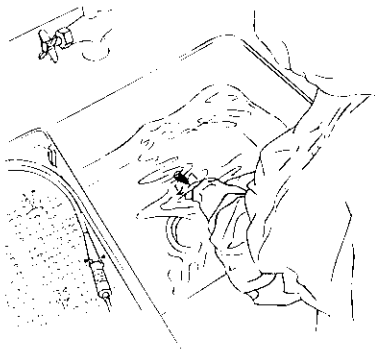The STERRAD® 100 Sterilizer is used for sterilizing heat and moisture sensitive instruments and medical devices. The STERRAD 100 Sterilizer optimizes the utilization of expensive instrumentation with a short sterilization cycle of about one hour (Fig. 3.1).

The STERRAD Sterilization System includes the STERRAD 100 Sterilizer, the hydrogen peroxide cassette, chemical indicator strips and tape, a biological indicator test pack, and a variety of instrument trays.

Most materials commonly used to make instruments and medical devices are compatible with the STERRAD Technology and can be sterilized in the STERRAD 100 Sterilizer.

> NOTE: Always check with the device manufacturer before processing any device in the STERRAD 100 Sterilizer.

The Association of Operating Room Nurses (AORN) states in their Standards and Recommended Practices[1] that the reliability of the sterilization process is affected by the number, type, and resistance of the organisms. Soil, oils, and lubricants may protect the organisms and prevent sterilization. The Association for the Advancement of Medical Instrumentation (AAMI) states in their recommended practices for sterilization[2] that producing a sterile item is a multiple step process that includes preparation at point of use, decontamination, preparation, packaging, and sterilization. Each step must be correctly completed to achieve sterilization.

Preparation

Cleaning

Thorough cleaning to remove organic and inorganic soil and debris is necessary to achieve sterilization (Fig. 3.2). The cleaning process should be the same regardless of the sterilization method that will be used. Once the items have been cleaned and decontaminated, they must be dried. All external and internal surfaces, such as lumens, must be dry because any remaining moisture will make it difficult to achieve the pressure needed to continue the cycle.

> NOTE: Always check with the device manufacturer before using suction or regulated compressed air to remove moisture from internal channels.

Figure 3.1 *The STERRAD 100 Sterilizer is used for sterilizing heat and moisture sensitive instruments and medical devices.*

Figure 3.2 *All items must be thoroughly cleaned and dried before sterilizing in the STERRAD 100.*

[1] 1995 Standards and Recommended Practices. Association of Operating Room Nurses, Inc. Denver, CO.
[2] AAMI Standards and Recommended Practices, Volume 1.1. Sterilization, Part 1 - Good Hospital Practices. 1995 Edition. Arlington, VA.
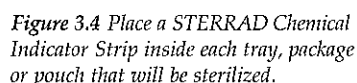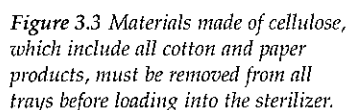
Notes

Figure 3.3 Materials made of cellulose, which include all cotton and paper products, must be removed from all trays before loading into the sterilizer.

Figure 3.4 Place a STERRAD Chemical Indicator Strip inside each tray, package or pouch that will be sterilized.

Figure 3.5 Complete a sterilization load record after each sterilization cycle.

Inspection

The device is now inspected for cleanliness and, if needed, assembled to assure it is operating correctly.

Preparation

Items that were assembled to assure correct operation may now need to be disassembled for sterilization to assure the hydrogen peroxide can contact all surfaces. Just as with steam, all surfaces of the device must be contacted if sterilization is to occur. As a general rule, if the device needs to be disassembled for steam sterilization, it should be disassembled for sterilization in the STERRAD 100 Sterilizer. Instruments with channels having a length of 12 inches (31 cm) or less and an internal channel diameter of 1/4 inch (6 mm) or larger require no special preparation.

> Note: Devices must be clean and functional. Multiple part devices may need to be disassembled to assure the hydrogen peroxide contacts all surfaces.

Cellulosic materials such as huck towels, gauze sponges, and instrument count sheets and foam products should not be used (Fig. 3.3). These materials absorb hydrogen peroxide which could reduce the concentration of hydrogen peroxide to a level that is not sufficient for sterilization.

The following items should NOT be loaded into the STERRAD 100 Sterilizer:
» No huck towels
» No gauze sponges
» No inventory sheets
» No foam products

A STERRAD Instrument Tray should be used. Its design allows clips and holding pins to be used to secure the devices and protect them from damage. The STERRAD Sterilization System includes specially formulated chemical indicator strips (CI's). Just as with all sterilization methods, the CI is placed inside each tray, package, or pouch (Fig. 3.4).

Only polypropylene CSR wrap or Tyvek/plastic pouches should be used. Select the correct size CSR wrap or pouch. Use STERRAD Chemical Indicator Tape to secure the closure.

> NOTE: Devices must be correctly prepared. A STERRAD Chemical Indicator Strip should be placed in every package. STERRAD Chemical Indicator Tape should be used to secure the package closure.
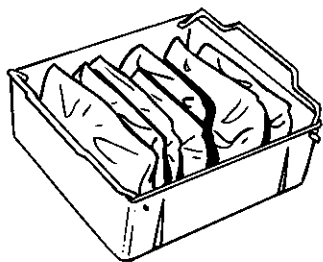
Notes

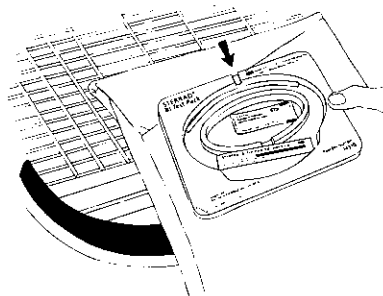*Figure 3.6 Proper arrangement of peel pouches in a STERRAD tray.*

Documentation

AAMI recommends that the lot number, the contents of the load, the cycle parameters, the operator identification, the response of the chemical indicator in the test pack, and the results of the biological testing be recorded for each sterilization cycle. A sample form, which can be found in the customer training manual, can be used (Fig. 3.5).

Because cellulosic materials, such as lot load labels, absorb hydrogen peroxide, they should be affixed to each package *after* sterilization.

> NOTE: The load record should be completed for each sterilization cycle.

Loading the Sterilizer Chamber

Place the wrapped instrument trays flat on the shelves. Do not stack trays or packages. Place pouch packaging on edge in an open STERRAD Tray with the transparent side of one pouch facing the opaque side of the next pouch (Fig. 3.6).

Place the STERRAD BI Test Pack on the lower shelf in the back of the chamber. Make sure the opening of the test pack is facing toward the back of the chamber (Fig. 3.7).

> NOTE: Always place instrument trays flat on the shelf. Do not stack trays or packages. Place the BI test pack on the lower shelf in the back of the chamber.

Figure 3.7 STERRAD BI Test Pack with arrow indicating the opening.

The Sterilization Process

The STERRAD Sterilization System is the first system designed to adapt low temperature plasma technology for the sterilization of medical supplies and equipment. The STERRAD Sterilization System is simple to use and safe for expensive and delicate medical devices. The STERRAD Sterilization System is safe for you and safe for the environment (Fig. 3.8).

The STERRAD 100 Sterilizer automatically starts, monitors, and controls the sterilization process. The sterilization cycle is composed of five stages: vacuum, injection, diffusion, plasma, and vent. The status of each stage of the cycle and the time remaining to complete the cycle will be shown on the liquid crystal display (LCD) screen.

When a cycle is started, the vacuum pump removes the air from the chamber. Next, the hydrogen peroxide is vaporized into the chamber and diffuses throughout the load. The plasma is then generated. The hydrogen peroxide molecules are broken apart into subatomic particles by a radio frequency. These particles form a cloud which is called plasma. Apart from hydrogen peroxide, the plasma is comprised of subatomic particles such as hydroxyl free radicals, hydroperoxyl free
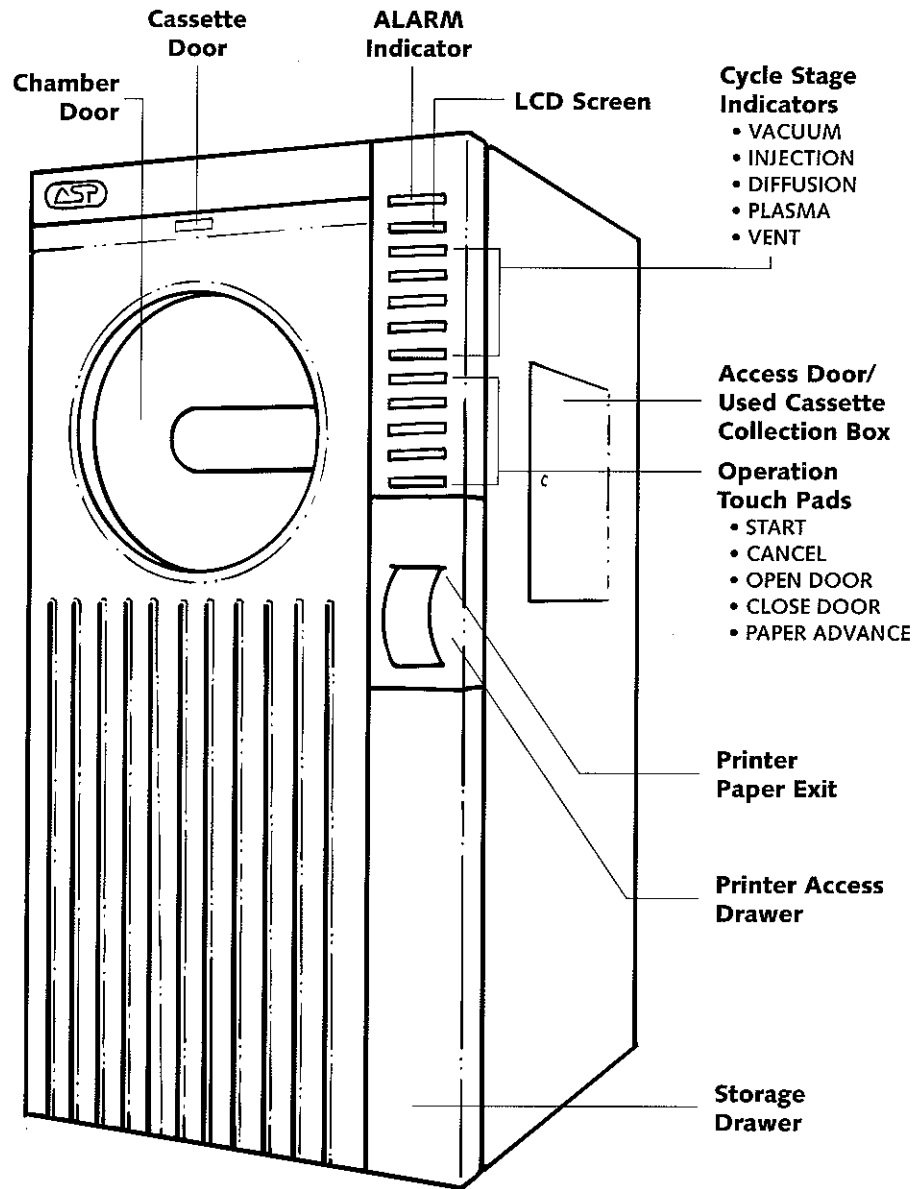
Notes

Cassette
Door

ALARM
Indicator

Chamber
Door

LCD Screen

Cycle Stage
Indicators
• VACUUM
• INJECTION
• DIFFUSION
• PLASMA
• VENT

Access Door/
Used Cassette
Collection Box

Operation
Touch Pads
• START
• CANCEL
• OPEN DOOR
• CLOSE DOOR
• PAPER ADVANCE

Printer
Paper Exit

Printer Access
Drawer

Storage
Drawer

Figure 3.8 The STERRAD 100 Sterilization System.

```
    STERRAD* 100 STERILIZER  # 940540
DAILY CYCLE # 1
TOTAL MACHINE CYCLES 144
THU 07/13/95  12:16:49 PM

Vacuum Stage        Press 282 mtorr
                    12:26:46 PM
Injection Stage        Press 7.10 torr
                    12:34:48 PM
Diffusion Stage       Pmax 10.3 torr
                    01:18:46 PM
Plasma                Press 500 mtorr
                    01:34:21 PM
Vent Stage
PROCESS COMPLETE
                    01:38:10 PM

Validated by:_ _ _ _ _ _ _ _ _ _ _ _ _

Biological Indicator:_ _ _ _ _ _ _ _ _ _
NUMBER OF CELLS AVAILABLE = 8

*Trademark.
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Figure 3.9 A printout records information about the sterilization cycle at the completion of each cycle.
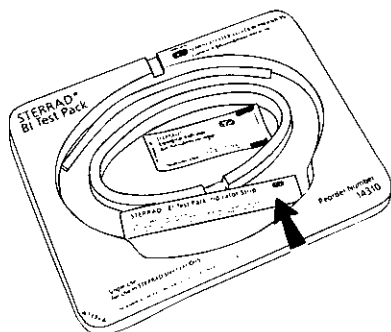

Figure 3.10 Always check the STERRAD BI Test Pack to assure the color of the chemical indicator strip has turned to yellow.
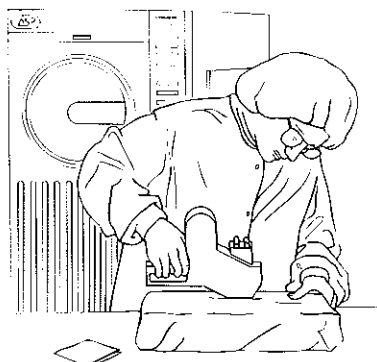

Figure 3.11 After sterilization, affix the load lot labels and count sheet to the packages.

radicals, ultra violet light, and activated peroxide. The combined use of hydrogen peroxide and plasma safely and rapidly sterilizes most medical instruments and materials without leaving toxic residues. At the end of the process, the free radicals in the low temperature plasma recombine to form oxygen and water vapor (i.e., humidity) instead of hydrogen peroxide. The chamber is vented to atmospheric pressure and the cycle is complete in just about one hour.

The five stages of the sterilization cycle are:
1. Vacuum
2. Injection
3. Diffusion
4. Plasma
5. Vent

The Sterilization Cycle

Initiation of the Sterilization Cycle
Press the START touch pad and the sterilizer chamber door will automatically close and start the cycle.

Completion of the Sterilization Cycle
The completion of the cycle is indicated by a continuous audible tone, the message "PROCESS COMPLETE" displayed on the LCD screen, and the advancement of the paper printout. Information about the duration time and pressures achieved in each of the cycle stages is shown on the cycle printout (Fig. 3.9).

Removing Sterile Items
First, check the printout to assure the cycle parameters have been achieved. Press the OPEN DOOR touch pad. Remove the STERRAD BI Test Pack and check to assure the color of the chemical indicator strip has turned to yellow (Fig. 3.10).

Check the chemical indicator tape on each package to assure the chemical slashes have turned to yellow. Affix the load labels and add the count sheet. The items are ready to be used or stored until needed.

> NOTE: Always check the printout. Always check the response of the chemical indicator strip in the BI Test Pack. Always check the response of the chemical indicator tape on each package. Affix the load lot label and count sheet, if needed, to the packages after sterilization (Fig. 3.11).

The biological indicator should be prepared following the recommended procedure found on the product insert sent with the STERRAD BI Test Pack.
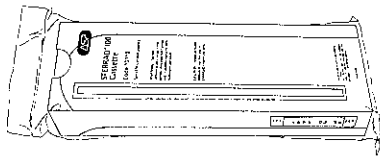
Notes

Figure 3.12 Always check the chemical indicator strip and expiration date on the hydrogen peroxide cassette package before opening.

Recommended Procedures

Inserting the Hydrogen Peroxide Cassette

The hydrogen peroxide precursor for the STERRAD 100 Sterilizer is provided in specially designed cassettes. Each STERRAD 100 Cassette provides enough hydrogen peroxide for 10 cycles.

When a new cassette is needed, the message "INSERT NEW CASSETTE" will be displayed on the LCD.

Procedure
1. Check the chemical indicator strip on the packaged cassette. The strip should be yellow (Fig. 3.12).

   NOTE: If the cassette has been damaged, the chemical indicator strip on the package will begin to turn red. If it is red, do not open the plastic package or use the cassette.

2. Check to assure the cassette has not expired. The expiration date is stamped on the side of the cassette.
3. Cut open the plastic package.
4. Remove the cassette from the package.
5. Find the direction arrow on the cassette (Fig. 3.13).
6. Insert the cassette into the cassette door with the arrow on top and pointing towards the back of the sterilizer.

Changing the Cassette Collection Box

The cassette collection box will hold 30 used cassettes. When the collection box needs to be changed, the message, "290 CYCLES, REMOVE CASSETTE BOX" will be displayed on the paper printout, and the LCD message will read "REPLACE USED CASSETTE COLLECTION BOX."

Figure 3.13 A hydrogen peroxide cassette with arrow indicating the direction it is to be inserted into the cassette door.

Procedure
1. Open the storage drawer and remove the hex wrench.
2. Unlock and open the access door on the right hand side of the sterilizer (Fig. 3.14).
3. Remove the filled box.
4. Close the box and secure both ends with tape (Fig. 3.15). The filled box can be discarded in the normal trash or according to hospital policy and procedure.
5. Assemble a new collection box.
6. Wait until a short beep is heard, about ten seconds after the filled box has been removed. This beep indicates the cycle counter has been reset.
7. Insert the new collection box making sure the lid is folded down so that the instructions face the door (Fig. 3.16).
8. Close and lock the access door.
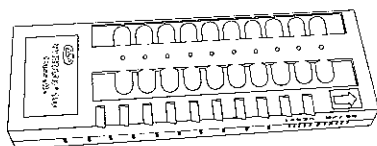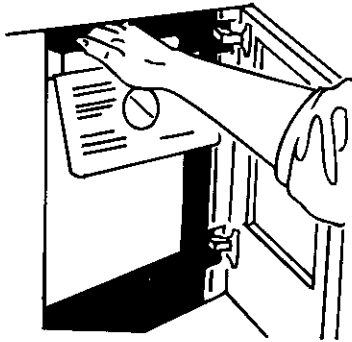9. Return the hex wrench and close the storage drawer.

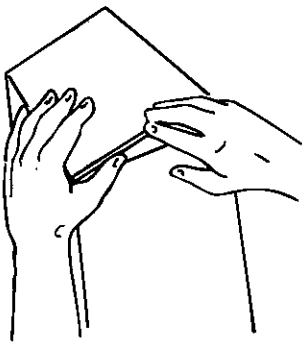**Figure 3.14** *Changing the cassette collection box.*

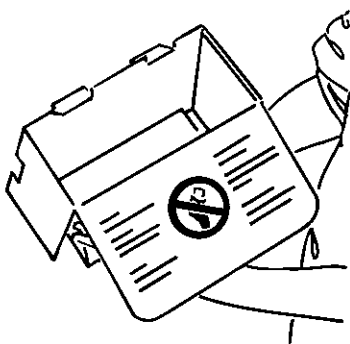**Figure 3.15** *Closing the cassette collection box.*

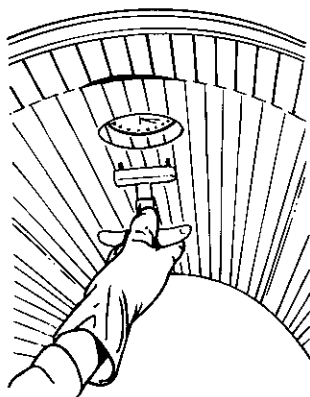**Figure 3.16** *New cassette collection box with lids folded properly.*

Figure 3.17 *Insert the pins of the bowl spanner tool into opposing holes in the vaporizer cap.*
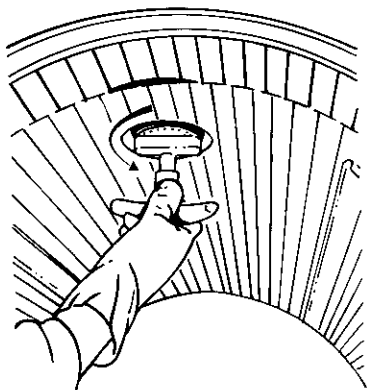

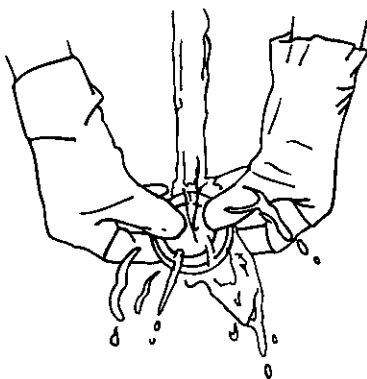Figure 3.18 *Rotate counterclockwise to remove the cap.*

Figure 3.19 *Thoroughly wash the cap under running water.*

NOTE: If the collection box is not changed by cycle 300, the sterilizer will not allow another cycle to be initiated and the message, "REPLACE COLLECTION BOX NO MORE CYCLES CAN BE RUN" will be displayed on the LCD screen, and the paper printout will read "REPLACE USED COLLECTION BOX NO FURTHER CYCLES CAN BE RUN."

Canceled Cycles

The STERRAD 100 Sterilizer has been programmed to automatically detect problems. The two most frequent problems that will cause a cycle cancellation are the presence of cellulosic materials such as huck towels, gauze sponges, count sheets, or paper labels, and moisture on or within a device. A canceled cycle will be indicated by an intermittent audible beep and the message, "CYCLE CANCELED, PLEASE WAIT 10 MINUTES" will be displayed on the LCD screen.

As a safety feature, a 10-minute plasma stage will be automatically initiated. When the safety plasma stage is completed, the message, "CYCLE CANCELED" will be shown on the LCD screen. The chamber door will automatically open and the paper printout will show the cycle canceled message in red ink.

Procedure
1. Remove the packages from the chamber.
2. Open each package.
3. Check for any cellulosic material and if found, remove it.
4. Discard the chemical indicator strip and packaging materials.
5. Check each item to assure it is thoroughly dry.
6. Use new CSR wrap or pouches and chemical indicators to repackage the items.

Check to see that the items appear dry. If the load appears wet, hydrogen peroxide may be present. Wear gloves while removing the items from the chamber.

Cleaning the Fixed Injector Valve Vaporizer Cap
Procedure
1. Wearing gloves, clean the exterior surface of the cap by wiping it with a clean, damp cloth.

Cleaning the Removable Injector Valve Vaporizer Cap

The injector valve vaporizer cap should be inspected and cleaned periodically. The injector valve vaporizer cap is located in the top front of the chamber.

Procedure
1. Remove the cap spanner tool from the storage drawer.
2. Put on gloves and eye protection.

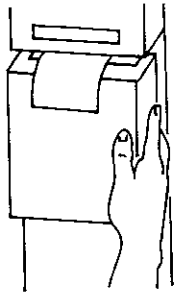**Notes**

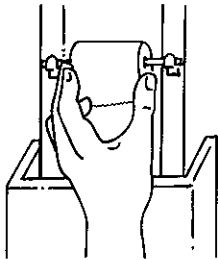**Figure 3.20** *Opening the printer drawer.*

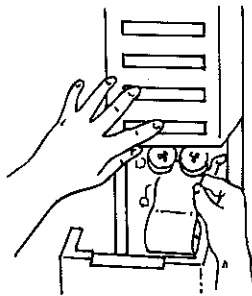**Figure 3.21** *Placing a new paper roll into the retaining clips.*

Figure 3.22 *Feeding the paper into the mechanism.*

3. Remove the injector valve vaporizer cap by inserting the two pins of the spanner tool into opposing holes in the injector valve vaporizer cap (Fig. 3.17).
4. Unscrew the vaporizer cap by turning counterclockwise and remove it (Fig. 3.18).
5. Clean the vaporizer cap under running water making sure each hole is clean (Fig. 3.19).
6. Dry the vaporizer cap with a soft non-linting cloth or compressed air.
7. Reinstall the injector valve vaporizer cap by inserting the two pins of the spanner tool into the holes in the injector valve vaporizer cap.
8. Screw the vaporizer cap by turning clockwise until the vaporizer cap is securely seated.
9. Return the spanner tool to the storage drawer.

Changing a Single Roll of Printer Paper
Procedure
1. Open the printer access drawer on the control panel (Fig. 3.20).
2. Remove the metal rod with the paper roll.
3. Discard the used paper roll.
4. Insert the metal rod into a new roll of paper.
5. Set the rod in the metal retaining clips (Fig. 3.21).
6. Make sure the edge of the paper is cut straight.
7. Feed the edge of the paper into the slot behind the printer ribbon until firm resistance is felt.
8. Push up gently on the paper while pressing the PAPER ADVANCE touch pad until the mechanism begins to pull the paper (Fig. 3.22).
9. Continue pressing the paper advance touch pad until about three inches of paper exits the slot.
10. Close the printer access drawer, taking care to ensure the paper exits the printer slot.

Changing a Double Roll of Printer Paper
Procedure
1. Open the printer drawer on the control panel and remove the large take-up reel containing the yellow backup copies of the cycles (Fig. 3.23).
2. Hold the black side of the take-up reel in one hand and, with the other hand, pull off the metal side of the reel (Fig. 3.24).
3. Remove the roll of yellow backup copies and save per hospital policies/procedures.
4. Snap the metal side back onto the reel and replace the reel into the holder.
5. Remove the empty paper core and discard the core (Fig. 3.25).
6. Place a new paper roll into position so that the paper feeds from the back of the roll (Fig. 3.26).
7. Feed the edges of both the white and yellow papers into the slot behind the printer cartridge (Fig. 3.27). Push up gently on the paper and press PAPER ADVANCE until the mechanism begins to pull the paper. Continue pressing PAPER ADVANCE until about 150

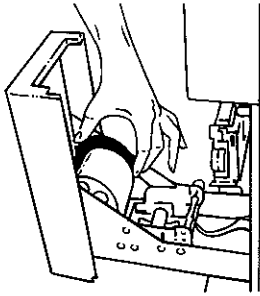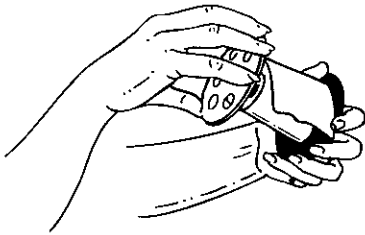**Figure 3.23** *Removing the take-up reel containing the yellow backup copies.*

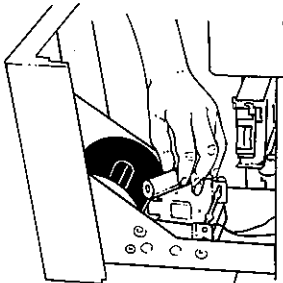**Figure 3.24** *Removing metal side of the take-up reel.*

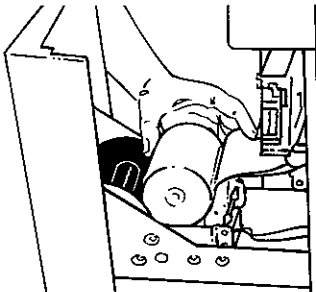**Figure 3.25** *Removing the empty paper core.*

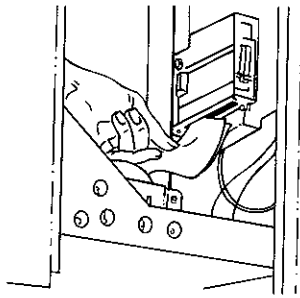**Figure 3.26** *Placing a new paper roll into proper position.*

Figure 3.27 Feeding the paper into the slot leading to the printer cartridge.
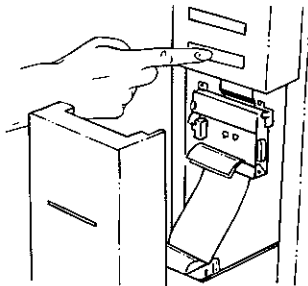
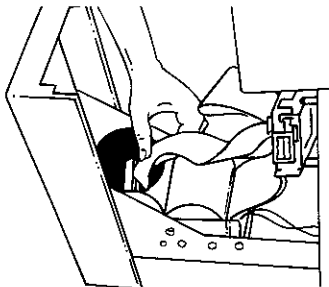

Figure 3.28 Advancing the paper.

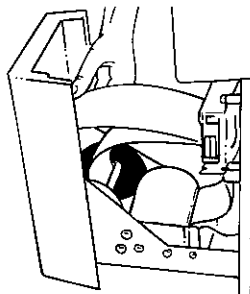*Figure 3.29 Inserting the yellow paper into the slot on the take-up reel.*

Figure 3.30 Feeding the white paper through the slot in the printer drawer.

to 160 mm (6 inches) of paper exits the printer cartridge (Fig. 3.28).

8. Feed the edge of the yellow paper into the slot located on the core of the take-up reel (Fig. 3.29).
9. Feed the white printer paper through the slot in the printer drawer and close the drawer (Fig. 3.30).

NOTE: To use a single (white paper only) roll, follow the steps above but ignore all references to yellow paper and the take-up reel.

Replacing the Printer Ribbon
Procedure
1. Open the printer drawer on the control panel (Fig. 3.31).
2. Hold back the security clips and pull carefully to remove each roll of the old ribbon (Fig. 3.32). Discard.
3. Hold back the security clip and mount one roll of the new printer ribbon (red half inside) (Fig. 3.33).
4. Unroll the ribbon about 150 mm (6 inches) and insert the ribbon into the printer ribbon slot (red half inside).
5. Hold back the security clip and mount the other roll.
6. Turn the right roll clockwise to remove any slack from the ribbon (Fig. 3.34).
7. Close the printer drawer, taking care to ensure that the printer paper exits the printer paper slot.

Replacing the Printer Cartridge
Procedure
1. Open the printer drawer on the control panel.
2. Remove the used cartridge by firmly, but carefully, pulling on the right side, as indicated by the arrow on the cartridge (Fig. 3.35).
3. Discard the used cartridge.
4. Insert a new cartridge by aligning the left side of the cartridge with the bracket on the machine. Push on the right side of the cartridge to snap it into place (Fig. 3.36).
5. Turn the knob on the cartridge clockwise to remove any slack from the ribbon (Fig. 3.37).
6. Close the printer drawer, taking care to ensure that the printer paper exits the printer paper slot (Fig. 3.38).

Generally, the printer ribbon will be changed by the ASP service technician during routine maintenance visits. Instructions for changing the printer ribbon are found in the Operator's Manual. All other maintenance is performed by an ASP service technician.

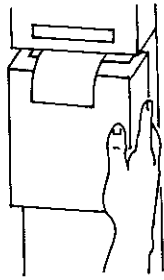*Figure* 3.31 *Opening the printer drawer.*

Figure 3.32 *Holding back the security clip to remove the old ribbon roll.*
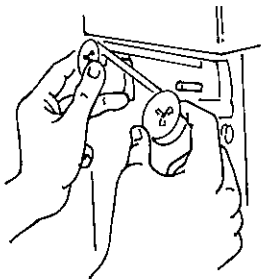

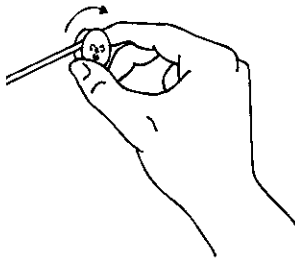*Figure* 3.33 *Unrolling the ribbon before mounting the second roll.*

Figure 3.34 *Removing slack from the ribbon.*
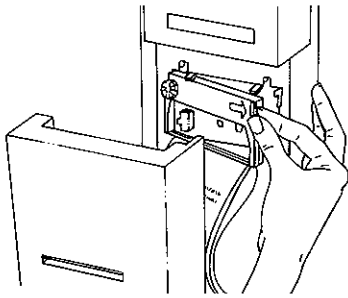
Figure 3.35 Removing the used printer cartridge.
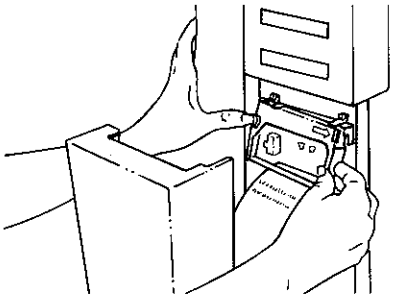
Figure 3.36 Inserting a new printer cartridge.
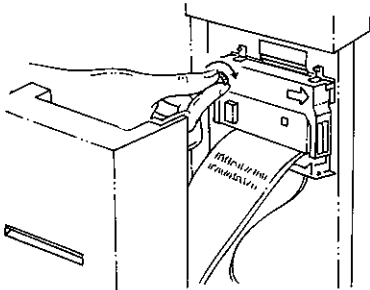
Figure 3.37 Removing slack from the printer ribbon.
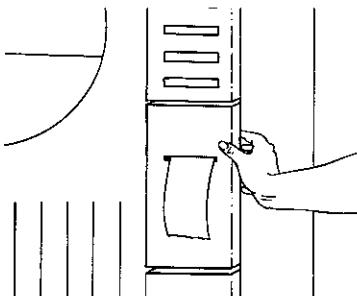
Figure 3.38 Closing the printer drawer.

Resetting the Time and Date

To begin changing time or date:
1. Press START and CANCEL at the same time.
2. The message screen will show the date; for example:

   DATE = MON 02/14/94
3. A flashing cursor will appear over day-of-week entry.
4. Each part of the display is known as a field. You control a field's content by pressing one of two buttons. To change the entry in a field, press OPEN DOOR until the desired entry appears. To accept the entry and move to the next field, press CLOSE DOOR.

To accept the day-of-week entry:
1. Press CLOSE DOOR.
2. The cursor will move to the next field.

To change the day-of-week entry:
1. Press OPEN DOOR.
2. Continue pressing OPEN DOOR until desired entry appears. Press CLOSE DOOR to accept entry and to move cursor to next field.
3. When the last field of the date display has been accepted (by pressing CLOSE DOOR), the screen will then show the time; for example:

   TIME = 08:10:32 AM
4. As with the date display above, press CLOSE DOOR to accept an entry and to move to the next field, or press OPEN DOOR to change the entry.
5. Move to each of the following fields (minutes, seconds, and AM/PM) and change or accept the entry as described above. The last field you will come to will be the AM/PM field. After this field has been changed and/or accepted, the current date will be displayed again.

To accept all current settings for time and date, and to exit this mode:
1. Press START and CANCEL together.
2. The message screen will show READY TO USE.

Notes

4 POST TEST

Post Test

Post Test

Name _____ Date _____

1. Before instruments can be sterilized in the STERRAD® 100 Sterilizer, they must be:

   ❏ a. clean
   ❏ b. thoroughly dry
   ❏ c. prepared correctly
   ❏ d. all of the above

2. Instruments must be thoroughly dry before being packaged for sterilization in the STERRAD 100 Sterilizer. Adequate pressure necessary for sterilization may not be achieved if moisture is present. This may cause the cycle to cancel.

   ❏ true   ❏ false

3. Multiple part instruments or devices may need to be disassembled for sterilization to assure the sterilant can contact all surfaces.

   ❏ true   ❏ false

4. Cellulosic materials are not used to prepare or package items because:

   ❏ a. they will absorb hydrogen peroxide which could reduce the concentration to a level that is not sufficient for sterilization.
   ❏ b. they will wick the steam.
   ❏ c. they are too expensive.

5. Some examples of cellulosic materials that are commonly used to prepare instruments are:

   ❏ a. huck towels
   ❏ b. gauze sponges
   ❏ c. paper inventory sheets
   ❏ d. all of the above

6. Packaging materials that can be used in the STERRAD 100 Sterilizer include:

    ❏ a. polypropylene CSR wrap and Tyvek/plastic pouches
    ❏ b. textile wrap and paper/plastic pouches
    ❏ c. disposable CSR wrap made from wood pulp
    ❏ d. both b and c

7. The STERRAD BI Test Pack should be placed:

    ❏ a. in the center of the load
    ❏ b. on the top shelf in the front of the chamber
    ❏ c. on the bottom shelf in the back of the chamber
    ❏ d. none of the above

8. The opening of the test pack should be facing toward:

    ❏ a. the back of the chamber
    ❏ b. the front of the chamber
    ❏ c. the side of the chamber
    ❏ d. the top of the chamber

9. The five stages of the STERRAD Sterilization Cycle are:

    ❏ a. preconditioning, EO exposure, aeration
    ❏ b. vacuum, steam injection, exposure, post vacuum
    ❏ c. vacuum, injection, diffusion, plasma, vent
    ❏ d. plasma, vent, diffusion, injection

10. Each STERRAD 100 Cassette provides enough hydrogen peroxide for:

    ❏ a. 1 cycle
    ❏ b. depends
    ❏ c. 10 cycles
    ❏ d. one month

5

EMPLOYEE ACTIVITIES

Employee Activity #1

Employee Activity #2

Employee Activity #1

Name _____ Date _____

Correctly label by placing the number by the following parts of the STERRAD® 100 Sterilizer (see Fig. 5.1).

1. Access Door/Used Cassette Collection Box
2. ALARM Indicator
3. CANCEL Touch Pad
4. Cassette Door
5. Chamber Door
6. CLOSE DOOR Touch Pad
7. Cycle Stage Indicators
8. LCD (Liquid Crystal Display) Screen
9. OPEN DOOR Touch Pad
10. PAPER ADVANCE Touch Pad
11. Printer Access Drawer
12. Printer Paper Exit
13. START Touch Pad
14. Storage Drawer

Figure 5.1 Correctly label by placing the number by the following
parts of the STERRAD 100 Sterilizer.

Employee Activity #2

Name _____ Date _____

Fill in the requested information by using the printout (see Fig. 5.2).

1. The sterilizer Identification Number is _____.

2. _____ total cycles have been completed.

3. This cycle is the _____ of the day.

4. The date of this printout is _____.

5. The cycle starting time is _____.

6. The vacuum stage ended at _____.

7. The pressure achieved during the vacuum stage was

   _____.

8. The five stages of the sterilization cycle are:

   _____

   _____

   _____

   _____

   _____

9. The cassette has _____ remaining cells.

10. _____ cells have already been used.

```
     STERRAD* 100 STERILIZER  # 940540
DAILY CYCLE # 1
TOTAL MACHINE CYCLES 144
THU 07/13/95  12:16:49 PM

Vacuum Stage        Press 282 mtorr
                    12:26:46 PM
Injection Stage     Press 7.10 torr
                    12:34:48 PM
Diffusion Stage     Pmax 10.3 torr
                    01:18:46 PM
Plasma              Press 500 mtorr
                    01:34:21 PM
Vent Stage
PROCESS COMPLETE
                    01:38:10 PM

Validated by:_ _ _ _ _ _ _ _ _ _ _ _ _ _

Biological Indicator:_ _ _ _ _ _ _ _ _ _ _ _
NUMBER OF CELLS AVAILABLE = 8


*Trademark.
```

Figure 5.2 STERRAD 100 Sterilization Cycle printout.

6 RETURN DEMONSTRATIONS

Return Demonstration #1

Return Demonstration #2

Return Demonstration #3

Return Demonstration #4

Return Demonstration #5

Return Demonstration #1

Name _____ Date _____

Placing Wrapped Supplies in the STERRAD® 100 Sterilization Chamber

Action	Acceptable	Needs Improvement
1. Record items in the load record book.		
2. Place pouch packages on edge with the transparent side of one pouch facing the opaque side of the next pouch.		
3. Place wrapped trays flat on the shelf. Wrapped trays and packages are not stacked. Supplies do not touch the sides of the sterilizer chamber.		
4. Place biological test pack on the lower shelf in the back of the sterilization chamber with opening facing the back of the chamber.		

Return Demonstration #2

Name _____ Date _____

Operating the STERRAD 100 Sterilizer

Action	Acceptable	Needs Improvement
1. Check LCD screen - insert a new cassette of hydrogen peroxide if needed.		
2. Initiate cycle by touching the start touch pad.		
[Completion of the cycle]		
3. Check the printout.		
4. Verify acceptable cycle.		
5. Sign printout.		
6. Press Open Door touch pad.		
7. Remove the STERRAD BI Test Pack.		
8. Remove the packages.		
9. Check the response of the STERRAD Chemical Indicator Strip in the BI Test Pack.		
10. Check the response of the STERRAD Chemical Indicator tape.		
11. Affix the load lot label to each package.		
12. Affix the inventory sheets to instrument trays if needed.		

Return Demonstration #3

Name _____ Date _____

Inserting the Hydrogen Peroxide Cassette

Action	Acceptable	Needs Improvement
1. Check LCD display.		
2. Check the chemical indicator (CI) strip on the packaged cassette.		
3. Check the expiration date.		
4. Cut open the plastic packaging.		
5. Remove the cassette from the package.		
6. Find the direction arrow on the cassette.		
7. Insert the cassette into the cassette door.		

Return Demonstration #4

Name _____ Date _____

Changing the Used Cassette Collection Box

Action	Acceptable	Needs Improvement
1. Get a new cassette collection box.		
2. Open the storage door and remove the hex wrench.		
3. Unlock and open the access door on the right hand side of the sterilizer.		
4. Remove the filled box.		
5. Close the box and secure both ends with tape. Discard the filled box in the normal trash or according to hospital policy and procedure.		
6. Assemble the new collection box.		
7. Wait until a short beep is heard – about 10 seconds after the filled box is removed.		
8. Insert the new collection box making sure the instructions face the door.		
9. Close and lock the access door.		
10. Return the hex wrench to the storage door.		

Return Demonstration #5
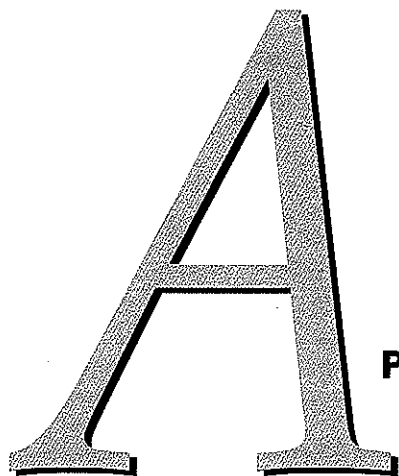
Name _____ Date _____

Resetting the Time and Date

Action	Acceptable	Needs Improvement
To begin changing time or date: 1. Press START and CANCEL at the same time.		
2. The message screen will show the date.		
3. A flashing cursor will appear over day-of-week entry.		
4. Each part of the display is known as a field. You control a field's content by pressing one of two buttons. To change the entry in a field, press OPEN DOOR until the desired entry appears. To accept the entry and move to the next field, press CLOSE DOOR.		
To accept the day-of-week entry: 1. Press CLOSE DOOR.		
2. The cursor will move to the next field.		
To change the day-of-week entry: 1. Press OPEN DOOR.		
2. Continue pressing OPEN DOOR until desired entry appears. Press CLOSE DOOR to accept entry and to move cursor to next field.		
3. When the last field of the date display has been accepted (by pressing CLOSE DOOR), the screen will then show the time.		
4. As with the date display above, press CLOSE DOOR to accept an entry and to move to the next field, or press OPEN DOOR to change the entry.		
5. Move to each of the following fields (minutes, seconds, and AM/PM) and change or accept the entry as described above. The last field you will come to will be the AM/PM field. After this field has been changed and/or accepted, the current date will be displayed again.		
To accept all current settings for time and date, and to exit this mode: 1. Press START and CANCEL together.		
2. The message screen will show READY TO USE.		

STERRAD® 100 Sterilizer

Training Program

for Sterilizer Operation

A PPENDICES

Post Test Scoring Guide

Employee Activity #1 Instructor's Scoring Guide

Employee Activity #2 Instructor's Scoring Guide

Post Test Scoring Guide

Name _____ Date _____

1. Before instruments can be sterilized in the STERRAD® 100 Sterilizer, they must be:

   ❑ a. clean
   ❑ b. thoroughly dry
   ❑ c. prepared correctly
   ☑ **d. all of the above**

2. Instruments must be thoroughly dry before being packaged for sterilization in the STERRAD 100 Sterilizer. Adequate pressure necessary for sterilization may not be achieved if moisture is present. This may cause the cycle to cancel.

   ☑ **true**   ❑ false

3. Multiple part instruments or devices may need to be disassembled for sterilization to assure the sterilant can contact all surfaces.

   ☑ **true**   ❑ false

4. Cellulosic materials are not used to prepare or package items because:

   ☑ **a. they will absorb hydrogen peroxide which could reduce the concentration to a level that is not sufficient for sterilization.**
   ❑ b. they will wick the steam.
   ❑ c. they are too expensive.

5. Some examples of cellulosic materials that are commonly used to prepare instruments are:

   ❑ a. huck towels
   ❑ b. gauze sponges
   ❑ c. paper inventory sheets
   ☑ **d. all of the above**

6. Packaging materials that can be used in the STERRAD 100 Sterilizer include:

☑ **a. polypropylene CSR wrap and Tyvek/plastic pouches**
☐ b. textile wrap and paper/plastic pouches
☐ c. disposable CSR wrap made from wood pulp
☐ d. both b and c

7. The STERRAD BI Test Pack should be placed:

☐ a. in the center of the load
☐ b. on the top shelf in the front of the chamber
☑ **c. on the bottom shelf in the back of the chamber**
☐ d. none of the above

8. The opening of the test pack should be facing toward:

☑ **a. the back of the chamber**
☐ b. the front of the chamber
☐ c. the side of the chamber
☐ d. the top of the chamber

9. The five stages of the STERRAD Sterilization Cycle are:

☐ a. preconditioning, EO exposure, aeration
☐ b. vacuum, steam injection, exposure, post vacuum
☑ **c. vacuum, injection, diffusion, plasma, vent**
☐ d. plasma, vent, diffusion, injection

10. Each STERRAD 100 Cassette provides enough hydrogen peroxide for:

☐ a. 1 cycle
☐ b. depends
☑ **c. 10 cycles**
☐ d. one month

Employee Activity #1
Instructors Scoring Guide

Name _____ Date _____

Correctly label by placing the number by the following parts of the STERRAD 100 Sterilizer (see Fig. 5.1).

1. Access Door/Used Cassette Collection Box
2. ALARM Indicator
3. CANCEL Touch Pad
4. Cassette Door
5. Chamber Door
6. CLOSE DOOR Touch Pad
7. Cycle Stage Indicators
8. LCD (Liquid Crystal Display) Screen
9. OPEN DOOR Touch Pad
10. PAPER ADVANCE Touch Pad
11. Printer Access Drawer
12. Printer Paper Exit
13. START Touch Pad
14. Storage Drawer

Cassette Door

ALARM Indicator

LCD Screen

Cycle Stage Indicators
- VACUUM
- INJECTION
- DIFFUSION
- PLASMA
- VENT

Chamber Door

Access Door/ Used Cassette Collection Box

Operation Touch Pads
- START
- CANCEL
- OPEN DOOR
- CLOSE DOOR
- PAPER ADVANCE

Printer Paper Exit
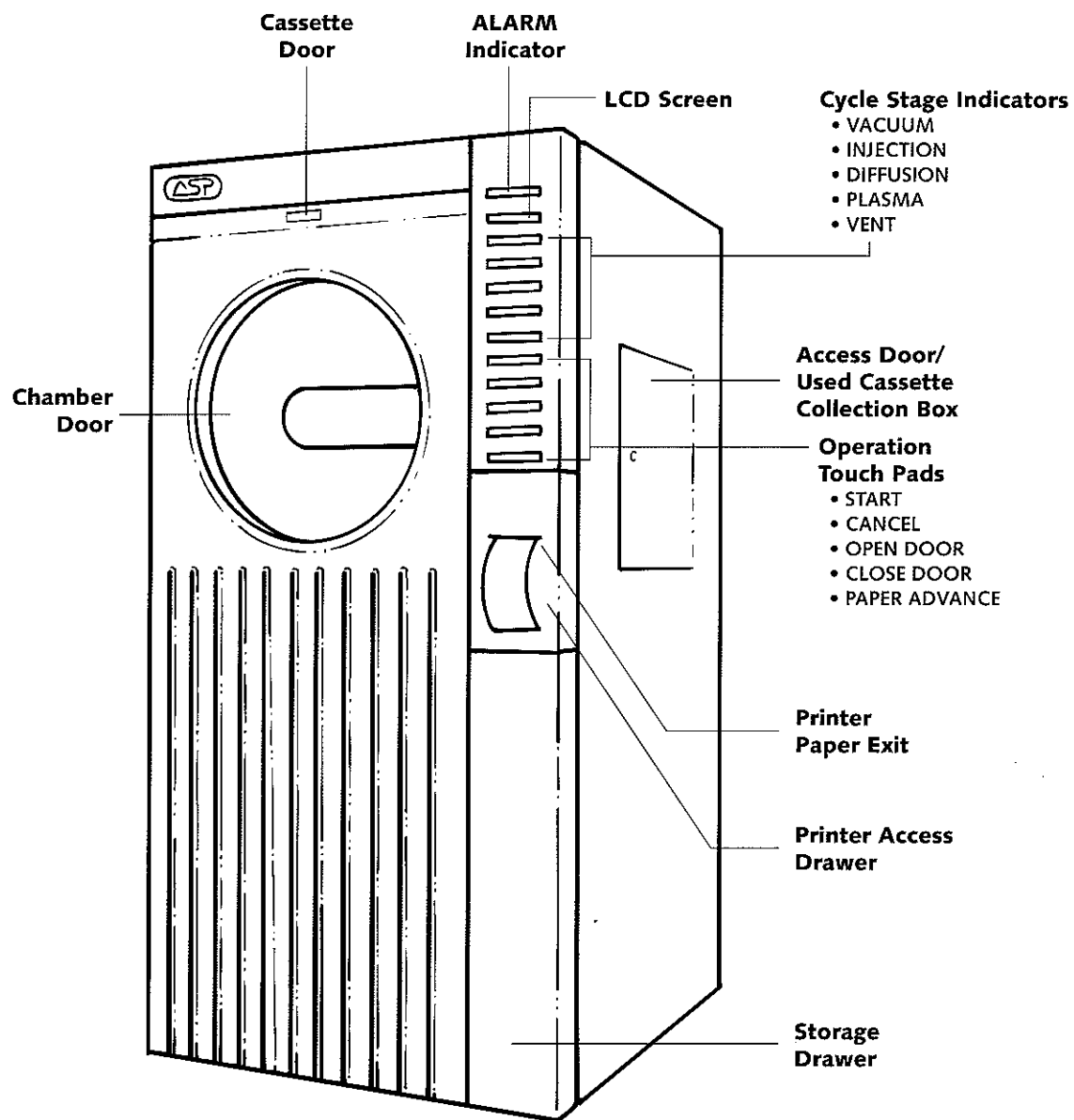
Printer Access Drawer

Storage Drawer

Figure 5.1 Correctly label by placing the number by the following parts of the STERRAD 100 Sterilizer.

Employee Activity #2
Instructors Scoring Guide

Name _____ Date _____

Fill in the requested information by using the printout (see Fig. 5.2).

1. The sterilizer Identification Number is _____**940540**_____.

2. _____**144**_____ total cycles have been completed.

3. This cycle is the _____**1**_____ of the day.

4. The date of this printout is _____**07/13/95**_____.

5. The cycle starting time is _____**12:16:49 PM**_____.

6. The vacuum stage ended at _____**12:26:46 PM**_____.

7. The pressure achieved during the vacuum stage was

_____**282 mtorr**_____.

8. The five stages of the sterilization cycle are:

_____**vacuum**_____

_____**injection**_____

_____**diffusion**_____

_____**plasma**_____

_____**vent**_____

9. The cassette has _____**8**_____ remaining cells.

10. _____**2**_____ cells have already been used.

```
   STERRAD* 100 STERILIZER  # 940540
DAILY CYCLE # 1
TOTAL MACHINE CYCLES 144
THU 07/13/95  12:16:49 PM

Vacuum Stage        Press 282 mtorr
                    12:26:46 PM
Injection Stage     Press 7.10 torr
                    12:34:48 PM
Diffusion Stage     Pmax 10.3 torr
                    01:18:46 PM
Plasma              Press 500 mtorr
                    01:34:21 PM
Vent Stage
PROCESS COMPLETE
                    01:38:10 PM


Validated by:_ _ _ _ _ _ _ _ _ _ _ _ _ _

Biological Indicator:_ _ _ _ _ _ _ _ _ _ _ _
NUMBER OF CELLS AVAILABLE = 8



*Trademark.
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Figure 5.2 STERRAD 100 Sterilization Cycle printout.