OPERATOR MANUAL

Amsco® Century™ Medium Steam Sterilizers
26" x 37.5" (660 x 953 mm)

• Prevacuum **• SFPP**

(12/16/05) **P129373-461**

A WORD FROM STERIS CORPORATION

This manual contains important information on proper use of this sterilizer. **All operators and department heads must carefully review and become familiar with the warnings, cautions and instructions contained in this manual.** These instructions are important to the health and safety of personnel operating the sterilizer and should be retained in a conveniently accessible area for quick reference.

This sterilizer is specifically designed to process goods using only the cycles as specified in this manual. If there is any doubt about a specific material or product, contact the manufacturer of the product for the recommended sterilization technique.

STERIS® carries a complete line of accessories for this unit to simplify, organize and assure sterility of the sterilization process. Instrument trays, pouches and biological/chemical monitoring systems are all available to fulfill your facility's processing needs. STERIS will gladly review these with you.

Service Information

A thorough preventive maintenance program is essential to safe and proper sterilizer operation. You are encouraged to contact STERIS concerning our Preventive Maintenance Agreement. Under terms of this agreement, preventive maintenance, adjustments, and replacement of worn parts are done on a scheduled basis to assure equipment performance at peak capability and to help avoid untimely or costly interruptions. STERIS maintains a worldwide staff of well-equipped, factory-trained technicians to provide this service, as well as expert repair services. Contact your STERIS representative for details.

Indications for Use

The Amsco® Century™ Medium Steam Sterilizer 26" x 37.5" (660 x 950 mm) is designed for sterilization of heat- and moisture-stabile materials used in healthcare facilities and is available in two medium size models:

- **Prevacuum** – designed for sterilization of heat and moisture-stabile materials. The Prevacuum sterilizer is equipped with Prevacuum, Gravity, Liquid, Leak Test and DART (Bowie-Dick) cycles.
- **Steam Flush Pressure Pulse (SFPP)** – designed for sterilization of heat and moisture-stabile materials. The SFPP sterilizer is equipped with SFPP, WRAP/SFPP, Prevacuum, Gravity, Liquid, Leak Test and DART (Bowie-Dick) cycles.

(Continued on following page.)

Printed in U.S.A.

Table 1. Factory-Set Cycles and Cycle Values

The Amsco Century Medium *Prevacuum* Sterilizer is equipped with the following factory programmed sterilization cycles and cycle values (**Table 1A**).

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. PREVAC	270°F (132°C)	4 MIN.	5 MIN.	Single Fabric Pack	ST-8
2. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. Fabric packs. *Refer to **Table 2** for recommended quantities.*	ST-8
3. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 2** for recommended quantities.*	ST-8
4. LIQUID	250°F (121°C)	45 MIN.	0 MIN.	*Refer to **Table 3** for guidelines.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 2** for recommended quantities.*	ST-8

The Amsco Century Medium *SFPP* Sterilizer is equipped with the following factory programmed sterilization cycles and cycle values (**Table 1B**).

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. WRAP/ SFPP	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Non-porous Goods, only. *Refer to **Table 2** for recommended quantities.*	ST-8
2. SFPP	270°F (132°C)	4 MIN.	20 MIN.	Fabric Packs *Refer to **Table 2** for recommended quantities.*	ST-8
3. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Fabric Packs. *Refer to **Table 2** for recommended quantities.*	ST-8
4. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 2** for recommended quantities.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 2** for recommended quantities.*	ST-8

Test Cycles for All Units	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
6. Leak Test[1]	270°F (132°C)	N/A	N/A	N/A	ST-8
7. DART Test[1]	270°F (132°C)	3-1/2 MIN.	1 MIN.	DART or Bowie-Dick Test Pack	ST-8
8. DART Warm-up[1]	270°F (132°C)	3 MIN.	1 MIN.	N/A	N/A

[1] *Not adjustable.*

Table 2. Recommended Loads by Sterilizer Chamber Size [1]

Chamber Size	Wrapped Instrument Trays	Fabric Packs
26x37.5x36" (660x950x910)	9	18
26x37.5x48" (660x950x1220)	12	30
26x37.5x60" (660x950x1520)	15	36

[1] *Refer to **Tables 1A** and to determine cycle use guidelines.*

Table 3. Liquid Cycle Processing Guidelines

Number of Containers	Volume of Liquid in One Container	Minimum Recommended Sterilize Time at 250°F (121°C) in minutes
3	1000 mL	45

Table 4. Sterilizer Configurations

The Amsco Century Medium Sterilizer 26 x 37.5" (66 x 950 mm) is offered in the following medium-sized configurations:

Hinged Door Configurations

26" x 37.5" x 36" (660 mm x 950 mm x 910 mm)	Single Door, Prevacuum
26" x 37.5" x 36" (660 mm x 950 mm x 910 mm)	Single Door, SFPP
26" x 37.5" x 48" (660 mm x 950 mm x 1220 mm)	Single Door, Prevacuum
" "	Double Door, Prevacuum
26" x 37.5" x 48" (660 mm x 950 mm x 1220 mm)	Single Door, SFPP
" "	Double Door, SFPP
26" x 37.5" x 60" (660 mm x 950 mm x 1520 mm)	Single Door, Prevacuum
" "	Double Door, Prevacuum
26" x 37.5" x 60" (660 mm x 950 mm x 1520 mm)	Single Door, SFPP
" "	Double Door, SFPP

Horizontal-sliding Door Configurations

26" x 37.5" x 36" (660 mm x 950 mm x 910 mm)	Single Door, Prevacuum
26" x 37.5" x 36" (660 mm x 950 mm x 910 mm)	Single Door, SFPP
26" x 37.5" x 48" (660 mm x 950 mm x 1220 mm)	Single Door, Prevacuum
" "	Double Door, Prevacuum
26" x 37.5" x 48" (660 mm x 950 mm x 1220 mm)	Single Door, SFPP
" "	Double Door, SFPP
26" x 37.5" x 60" (660 mm x 950 mm x 1520 mm)	Single Door, Prevacuum
" "	Double Door, Prevacuum
26" x 37.5" x 60" (660 mm x 950 mm x 1520 mm)	Single Door, SFPP
" "	Double Door, SFPP

Advisory

This sterilizer is specifically designed to only process goods using the cycles as specified in this manual. If there is any doubt about a specific material or product, contact the manufacturer of that product for the recommended sterilization technique.

A summary of the safety precautions to be observed when operating and servicing this equipment can be found in *SECTION 1* of this manual. Do not operate or service the equipment until you have become familiar with this information.

Any alteration of the sterilizer not authorized or performed by STERIS Engineering Service which could affect its operation will void the warranty, could adversely affect sterilization efficacy, could violate national, state and local regulations and jeopardize your insurance coverage.

TABLE OF CONTENTS

STERILIZER OPERATING INSTRUCTIONS

LIST OF TABLES

LISTING OF WARNINGS AND CAUTIONS

1

Following is a list of the safety precautions which must be observed when operating this equipment. WARNINGS indicate the potential for danger to personnel, and CAUTIONS indicate the potential for damage to equipment. These precautions are repeated (in whole or in part), where applicable, throughout the manual. This is a listing of all safety precautions appearing in the manual. Carefully read them before proceeding to use or service the unit.

WARNING – ELECTRIC SHOCK AND BURN HAZARD:

⚠ **Disconnect all utilities to sterilizer before servicing.** Do not service the sterilizer unless all utilities have been properly locked out. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See CFR 1910.147 and .331 through .335.)

WARNING – PERSONAL INJURY HAZARD:

⚠ **Avoid personal injury from bursting bottles.** Liquid sterilization cycle must only be used for liquids in borosilicate (Pyrex) flasks with vented closures.

⚠ **Door must be locked and the key retained prior to entering chamber for servicing.** Always follow appropriate Lockout-Tagout and electrical safety-related work practice standards. Emergency stop switch can be depressed and key retained on sliding door units.

WARNING:

⚠ **It is inappropriate for a healthcare facility to sterilize liquids** for direct patient contact.

WARNING – BURN HAZARD:

⚠ **When sterilizing liquids,** to prevent personal injury or property damage resulting from bursting bottles and hot fluid, you must observe the following procedures:

- Use Liquid cycle only; no other cycle is safe for processing liquids.
- Use only vented closures; do not use screw caps or rubber stoppers with crimped seal.
- Use only Type I borosilicate glass bottles; do not use ordinary glass bottles or any container not designed for sterilization.
- Do not allow hot bottles to be jolted; this can cause hot-bottle explosions. Do not move bottles if any boiling or bubbling is present.

⚠ **Sterilizer, rack/shelves, and loading car will be hot after cycle is run**. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ **Do not** attempt to open the sterilizer door if a **WATER IN CHAMBER ALARM** condition exists. Call a qualified service technician before attempting to use sterilizer further.

⚠ **After manual exhaust, steam may remain inside the chamber.** Always wear protective gloves, apron, and a face shield when following emergency procedure to unload sterilizer. Stay as far back from the chamber opening as possible when opening the door.

⚠ **Allow sterilizer to cool to room temperature** before performing any cleaning or maintenance procedures.

⚠ **Failure to shut off the steam supply** when cleaning or replacing strainers can result in serious injury.

⚠ **Jacket pressure must be 0 psig before beginning work on the steam trap.**

WARNING – BURN HAZARD:

⚠ **Proper testing of the safety valve requires the valve to be operated under pressure.** Exhaust from the safety valve is hot and can cause burns. Proper safety attire (gloves, eye protection, insulated overall) as designated by OSHA, is required. Testing is to be performed by qualified service personnel only.

⚠ **Steam may be released from the chamber when door is opened.** Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – EXPLOSION HAZARD:

⚠ **This sterilizer** is not designed to process flammable compounds.

WARNING – SLIPPING HAZARD:

⚠ **To prevent falls, keep floors dry** by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD:

⚠ **Regularly scheduled preventive maintenance is required** for safe and reliable operation of this equipment. Contact your STERIS service representative to schedule preventive maintenance.

⚠ **When closing the chamber door,** keep hands and arms out of the door opening and make sure opening is clear of obstructions.

⚠ **Repairs and adjustments to this equipment** must be made only by fully qualified service personnel. Maintenance performed by inexperienced, unqualified persons or installation of unauthorized parts could cause personal injury or result in costly equipment damage.

WARNING – STERILITY ASSURANCE HAZARD:

⚠ **Load sterility may be compromised if the biological indicator or air leak test indicates a potential problem**. If these indicators show a potential problem, refer the situation to a qualified service technician before using the sterilizer further.

⚠ **According to AAMI standards, a measured leak rate greater than 1 mm Hg/minute (1.3 mbar/min) indicates a problem with the sterilizer.** Refer the situation to a qualified service technician before using the sterilizer further.

CAUTION – POSSIBLE EQUIPMENT DAMAGE:

- Gasket must be fully retracted prior to operating sterilizer door.
- If 0 dry time is selected, sterilizer automatically initiates a vapor removal phase in place of drying. This phase can still draw a vacuum to 5 inHg. Consult device manufacturer's recommendations to ensure devices being processed can withstand this depth of vacuum.
- Lifting the chamber float switch when cleaning the chamber may cause the sterilizer control to initiate a "Chamber Flooded" alarm. If this alarm condition occurs, the operator must turn the control power OFF then ON to clear the alarm. The control power switch is located in the mechanical area at the side of the sterilizer. Placing the sterilizer in standby does not clear this alarm.
- Never use a wire brush, abrasives, or steel wool on door and chamber assembly. Do not use cleaners containing chloride on stainless-steel surfaces. Chloride-based cleaners will deteriorate stainless steel, eventually leading to failure of the vessel.
- Do not use cleaners containing chlorides on loading cars. Chloride-based cleaners will deteriorate the loading car metal.
- Sterilization of chloride-containing solutions (e.g., saline) can cause chamber corrosion and is not recommended by the manufacturer. If, however, chloride-containing solutions must be processed, clean the chamber after each use.
- Allow thermostatic traps to cool down to room temperature before removing cover. Since there is nothing to limit expansion, the bellows may rupture or fatigue if trap is opened while hot.
- Actuation at less than 75% of rated pressure can allow debris to contaminate the seat and cause the safety valve to leak. A leaking safety valve must be replaced.
- Insufficient service clearance will make repairs more difficult and time-consuming.
- Piping sized too small may cause water hammer, resulting in damage to the sterilizer.
- After installation, it is mandatory to brace piping at the drain funnel so that it will not move vertically.
- Make sure door opening is clear of any obstruction before closing the door(s).
- Do not attempt to open sterilizer door during manual operation unless chamber is at 0 psig.
- During manual operation, gasket must be fully retracted prior to operating sterilizer door.
- Immediately wipe up saline solution spills on loading car, to prevent damage to stainless steel.

An Equipment Drawing showing all utility and space requirements was supplied with the sterilizer. Clearance space shown on the drawing is necessary for ease of installation and to assure proper operation and maintenance of equipment. Uncrating and Installation Instructions were also furnished with the sterilizer. If any of these documents are missing or misplaced, contact STERIS® giving the serial and model numbers of the equipment. Replacement copies will be sent to you promptly.

2.1 Installation Checklist

After installing this unit according to the instructions provided, complete the following checklist to assure that your installation is complete and correct. Or, if you desire, contact STERIS for a technician to be scheduled to test your installation and demonstrate proper equipment operation.

2.1.1 Service Clearance

CAUTION: Insufficient service clearance will make repairs more difficult and time-consuming.

❑ Clearance as specified on the equipment drawing must be available.

2.1.2 Plumbing Services

CAUTION: Piping sized too small may cause water hammer, resulting in damage to the sterilizer.

❑ **Feed Water:**

- ❑ All supply line shutoffs must be provided with lockout capability.
- ❑ Backflow prevention is by others.
- ❑ **Water Pressure**– measured (specification is 20 to 50 psig [1.4 to 3.5 bar], dynamic). Water pressure supplied must be within specifications as shown on the Equipment Drawing. If pressure is too high, a regulator must be installed. If water pressure is too low, equipment performance will be affected.
- ❑ **Water Quality**– supplied must be within specifications. Improper water quality adversely affects equipment operation. Damage to the equipment due to improper water quality is not covered under warranty.

❑ **Steam Supply:**

- ❑ Shutoffs (with provisions for lockout and tagout) located nearby.
- ❑ Supply piping adequately sized.
- ❑ Supply pressure measured (specification is 50 to 80 psig [3.5 to 5.2 bar], dynamic).

❑ **Drain Piping** must be sloped properly, and sized to handle the maximum waste flow from the sterilizer.

CAUTION: After installation, it is mandatory to brace piping at the drain funnel so it will not move vertically.

❑ Electric single-phase service to the unit must be as specified on the Equipment Drawing and on the Machine Data Plate.

2.1.3 Electrical Service

- ❑ Electric single-phase service requires a clearly marked disconnect with lockout/tagout capability located near the sterilizer.
- ❑ Electric single-phase service should be on a separate circuit, and not tied into circuits containing large reactive loads (e.g., motors).
- ❑ The protective earth ground must be connected to terminal block TB-1 in the sterilizer power box.
- ❑ Three-phase power for vacuum pump must meet specifications on the equipment drawing.
- ❑ Verify proper rotation of the vacuum pump by observing pump rotor shaft.
- ❑ 3-phase service requires a clearly marked disconnect with lockout/tagout capability located near the sterilizer.

2.1.4 Sterilizer Final Check

- ❑ Chamber leveled properly.
- ❑ Door opens and closes smoothly.
- ❑ Door locked switches adjusted correctly.
- ❑ Chamber strainer in place.
- ❑ Rack and shelves and/or loading car operates correctly.
- ❑ Paper loaded in printer.
- ❑ Printer ribbon properly installed.
- ❑ Warranty labels properly applied.

2.1.5 Cycle Operation

⚠ WARNING – EXPLOSION HAZARD: This sterilizer is not designed to process flammable compounds.

- ❑ Unit powers up correctly.
- ❑ Run Leak Test cycle – leak rate is to be less than 1.0 mm Hg/minute (1.3 mbar/min).
- ❑ Verify operation of a typical cycle (270°F [132° C] prevacuum).

2.2 Technical Specifications

2.2.1 Overall Exterior Dimensions W x L x H

- **36" Sterilizer:** Hinged Door — 44 x 51 1/2 x 75 1/4" (1118 x 1308 x 1911 mm)
  Sliding Door — 70 x 57 x 75 1/4" (1778 x 1448 x 1911 mm)
- **48" Sterilizer:** Hinged Door — 44 x 63 1/2 x 75 1/4" (1118 x 1600 x 1911 mm)
  Sliding Door — 70 x 69 x 75 1/4" (1778 x 1753 x 1911 mm)
- **60" Sterilizer:** Hinged Door — 44" x 75 1/2" x 75 1/4" (1118 x 1918 x 1911 mm)
  Sliding Door — 70 x 81 x 75 1/4" (1778 x 2057 x 1911 mm)

2.2.2 Weight (Fully Loaded)

- **36" Sterilizer:** 3800 lbs (1720 kg)
- **48" Sterilizer:** 4200 lbs (1901 kg)
- **60" Sterilizer:** 4700 lbs (2127 kg)

2.2.3 Utility Requirements

- **Electric:**

Controls	120 V, 2 A, 1-phase
Vacuum Pump	208/240 V, 6 A, 3-phase, or 480 V, 3 A, 3-phase

- **Water:**

Pressure:	20 to 50 psig (1.4 to 3.5 bar)
Temperature:	70°F (21°C) maximum
Consumption:	15 gpm (57 lpm), peak

- **Steam:**

Pressure: 50 to 80 psig (3.5 to 5.2 bar)

Consumption:

36" Sterilizer:	190 lb/hr (86 kg/hr)
48" Sterilizer:	255 lb/hr (116 kg/hr)
60" Sterilizer:	335 lb/hr (152 kg/hr)

2.2.4 Environmental Conditions

Temperature: 50° to 90°F (10° to 32°C)

Humidity: 10% to 90% noncondensing

Pollution Degree: 2

Installation Category (Overvoltage Category): II

A-Weighted Sound Power Level: ≤ 85 dBA (maximum)

3.1 General

⚠ WARNING: It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

The information in this section is intended as a general guide to steam sterilization techniques. Also recommended is reference to the standards of the Association for the Advancement of Medical Instrumentation (AAMI ST-46), Steam Sterilization and Sterility Assurance, 3rd Edition.

- Prior to sterilization, all materials and articles must be thoroughly cleaned.
- After sterilization, goods should be stored in conditions that will not compromise the barrier quality of their wrapping materials.

IMPORTANT: Applicable cycles have been validated to satisfy the requirements outlined in Table 3-1. If cycle parameters (sterilize time, dry time, temperature) other than those in Tables 6-1A and 6-1B are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI for guidelines and standards for a guide to validating sterilization cycles and to ensure that proper sterility assurance level (SAL) as well as moisture retention acceptance criteria are met.

NOTE: Contact STERIS® for information on a wide range of education/ training programs designed to meet the educational needs of healthcare industries.

As part of the operator's verification of the sterilization process, biological indicators may be used to demonstrate that sterilization conditions have been met.

NOTE: Contact STERIS for information on specific biological indicators recommended for use with this sterilizer.

Table 3-1. Cycle Availability

Cycle Type	Load	Sterilize Temp.	Sterilize Time	Dry Time	Default	Optional
Gravity*	Full Load Fabric Packs	270°F	25 min	15 min		X
Gravity*	Full Load Fabric Packs	250°F	30 min	15 min		X
Gravity*	Full Load Instrument Trays	270°F	15 min	30 min		X
Flash**	Unwrapped, non-porous Instrument Tray	270°F	3 min	1 min	X	
Flash**	Unwrapped, non-porous Instrument Tray	270°F	10 min	1 min		X
Liquid*	Three 1000ml Bottles	250°F	45 min	N/A		X
Prevac*	Single Fabric Pack	270°F	4 min	5 min		X
Prevac*	Full Load Fabric Packs	270°F	4 min	20 min		X
Prevac*	Full Load Instrument Trays	270°F	4 min	20 min		X
Prevac*	Full Load Instrument Trays	275°F	3 min	16 min	X	
SFPP*	Single Fabric Pack	270°F	4 min	5 min		X
SFPP*	Full Load Fabric Packs	270°F	4 min	20 min	X	
Wrap/SFPP*	Full Load Instrument Trays	270°F	4 min	20 min	X	
Wrappid/Express*	Single-Wrapped Instrument Tray	270°F	4 min	3 min	X	
DART*	Bowie-Dick Test Pack	270°F	3½ min	1 min	X	
Leak* Test	None	N/A	N/A	N/A	X	

** Cycles qualified to AAMI ST-8*
*** Cycles qualified to AAMI ST-37*

3.2 Control Measures for Verifying Sterilization Process

A live spore test utilizing *B. stearothermophilus* is the most reliable form of biological monitoring. This type of product utilizes controlled populations of a controlled resistance, so that survival time and kill time can be demonstrated.

To verify the process, insert the biological indicator in a test pack and place pack on the bottom shelf. Run test pack through a typical cycle. On completion, forward test pack and monitor to appropriate personnel for evaluation. Refer to AAMI guidelines to conduct routine biological monitoring.

3.2.1 Biological Monitors

Tests such as the DART® (Daily Air Removal Test)* or Bowie-Dick are designed to document the removal of residual air from a sample challenge load.

Run a DART (Bowie-Dick test) cycle daily before processing any loads in a sterilizer equipped with prevacuum cycles. The first prevacuum cycle of each day should be used to test the adequacy of air removal from the chamber and load, so that steam can penetrate the load. It is not a test for adequate exposure to heat in terms of time-at-temperature.

3.2.2 Testing for Prevacuum Efficiency

In the case of these tests, following exposure in a prevacuum sterilizing cycle, the pack is opened, the indicator examined, and conclusions are drawn as to the pattern of residual air, if any, that remained in the pack during the sterilizing cycle. Any indication of a malfunction must be reported to the supervisor. Sterilizer must not be used again until approved by supervisor.

⚠ WARNING – STERILITY ASSURANCE HAZARD: Load sterility may be compromised if the biological indicator or vacuum leak test indicates a potential problem. If these indicators show a potential problem, refer the situation to a qualified service technician before using the sterilizer further.

3.3 DART (Bowie-Dick) Test

WARNING – STERILITY ASSURANCE HAZARD: Load sterility may be compromised if the biological indicator or vacuum leak test indicates a potential problem. If these indicators show a potential problem, refer the situation to a qualified service technician before using the sterilizer further.

The DART (Bowie-Dick) Test is designed to document the removal of residual air from a sample challenge load in a prevacuum sterilizer. This test does not apply to gravity, liquids or SFPP cycles.

In the case of this test, following exposure in a prevacuum test cycle, the pack is opened, the indicator examined and conclusions are drawn as to the pattern of residual air, if any, that remained in the pack during the sterilizing cycle. Any indication of a malfunction must be reported to the supervisor. Sterilizer must not be used to run prevacuum cycles until approved by supervisor.

According to AAMI ST-46, a steam penetration test shall be carried out at the beginning of each day the sterilizer is to be used. Refer to instructions for running the DART test cycle in *SECTION 5.* DART test packs are designed to expose the pattern and document the removal of residual air from the sample load. Any test package must be constructed in accordance with instructions given in the AAMI ST-46 standard.

NOTE: The DART test cycle is not a test for adequate exposure to heat in terms of time-at-temperature.

3.4 Vacuum Leak Test

WARNING – STERILITY ASSURANCE HAZARD: Load sterility may be compromised if the biological indicator or vacuum leak test indicates a potential problem. If these indicators show a potential problem, refer the situation to a qualified service technician before using the sterilizer further.

The Vacuum Leak Test (see appropriate cycle description in Section 5) measures the integrity of the sealed pressure vessel and associated piping to assure air is not being admitted to the sterilizer during the vacuum drawdowns.

After running a Leak Test cycle, a value or leak rate will be printed on the printer tape. This value will help define a trend over a period of time if the integrity of the system begins to deteriorate (i.e., allowing air to enter the system). By running a Leak Test cycle daily or weekly, the operator or maintenance personnel can always monitor the air tightness of the system and make repairs or adjustments when necessary.

NOTE: A leak rate of greater than 1 mmHg per minute indicates a problem with the sterilizer that must be addressed.

3.5 Recommendations for the Sterilization Process

Saturated steam is a well controlled, reliable method for processing items which can withstand the temperatures and pressures associated with steam sterilization. The requirements for achieving reproducible results are well known by many users, but are not always understood by all users.

The condition most likely to result in sterilization problems is a failure to remove all of the air from the items being processed. For example, placing an empty beaker or bowl in an upright position in a gravity displacement sterilizer may result in the object not being sterilized, or may require exceptionally long sterilization times. This problem is due to the fact air has almost twice the density as does saturated steam under the same conditions. Thus, the air sits in the bottom of the container, and the steam forms a stable layer over the air. This effect is similar to oil forming a stable layer over water. As long as there is no mechanism for actively mixing the two, the bottom of the container will only see dry heat, which is not an effective sterilization method at the time and temperatures typically used in steam processes.

There are two traditional methods for enhancing the sterilization of solid bottom containers in gravity displacement cycles. These are:

- Place 1 mL of water for each liter of volume in the bottom of each container. The expansion of the water into steam as the product is heated will force most of the air out of the object, thus allowing steam to reach all surfaces and effect sterilization.
- The better, more reliable method is to orient all objects in a manner which would allow water to flow out. When the steam enters the chamber, it will tend to layer over the air. However, the object is now oriented so the air can flow out. As the air flows out of the container, it will be replaced by the steam. The steam can now reach all surfaces and effect sterilization.

3.6 Techniques of Sterilization for Liquid Cycle

⚠ WARNING – EXPLOSION HAZARD: This sterilizer is not designed to process flammable compounds.

⚠ WARNING – PERSONAL INJURY HAZARD: Avoid personal injury from bursting bottles. Liquid sterilization cycle must only be used for liquids in borosilicate (Pyrex) flasks with vented closures.

⚠ WARNING: It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

⚠ WARNING: When sterilizing liquids, you must observe the following procedures:

- **Use Liquid cycle only.**
- **Use only vented closures.**
- **Use only Type I borosilicate glass bottles.**
- **Do not allow hot bottles to be jolted.**

⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ CAUTION: Sterilization of chloride-containing solutions (e.g., saline) can cause chamber corrosion and is not recommended by the manufacturer. If, however, chloride-containing solutions must be processed, clean the chamber after each use.

IMPORTANT: It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

Refer to **Table 3-2** for recommended Liquid cycle parameters. The recommended times indicated in **Table 3-2** assume the use of vented bottles. The "minimum sterilization time" includes the time required to bring the solution up to the sterilize temperature plus the time required to achieve sterilization.

Table 3-2. Liquid Cycle Parameters

Number of Containers	Volume of Liquid in One Container	Minimum Recommended Sterilize Time at 250°F (121°C) in minutes
3	1000 mL	45

3.7 Recommendations for Sterilizing Liquids

⚠ WARNING – EXPLOSION HAZARD: This sterilizer is not designed to process flammable compounds.

⚠ WARNING – PERSONAL INJURY HAZARD: Avoid personal injury from bursting bottles. Liquid sterilization cycle must only be used for liquids in borosilicate (Pyrex) flasks with vented closures.

⚠ WARNING – BURN HAZARD: It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

⚠ WARNING – BURN HAZARD: When sterilizing liquids, you must observe the following procedures:

- **Use Liquid cycle only.**
- **Use only vented closures.**
- **Use only Type I borosilicate glass bottles.**
- **Do not allow hot bottles to be jolted.**

⚠ CAUTION: Sterilization of chloride-containing solutions (e.g., saline) can cause chamber corrosion and is not recommended by the manufacturer. If, however, chloride-containing solutions must be processed, clean the chamber after each use.

IMPORTANT: Please read the following paragraphs before sterilizing any liquids in your sterilizer. It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

Borosilicate glass is required because it is a superior glass capable of resisting thermal shock. If glass not as thermally resistant is used, a greater potential for bursting exists.

Vented closures are required because, by design, they release internal pressure build-up by automatically venting the containers, whereas pressure in unvented containers remains until the contents have cooled. Examples of vented closures are shown in Figure 3-1.

When loading, place small bottles in a separate basket to minimize sliding. Always use side rails on the loading car to prevent containers or baskets from falling off.

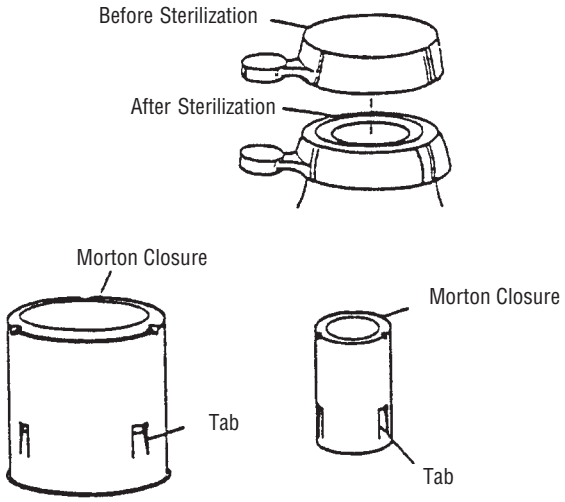
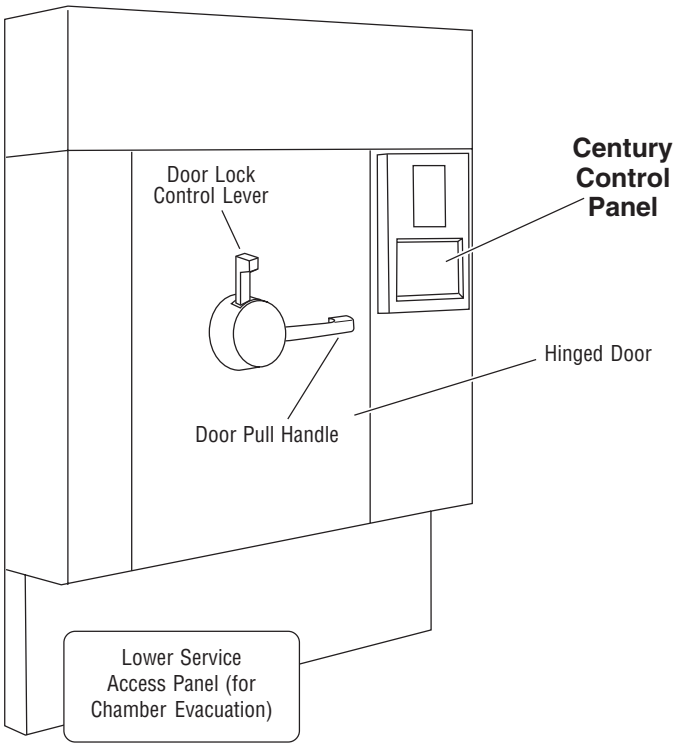
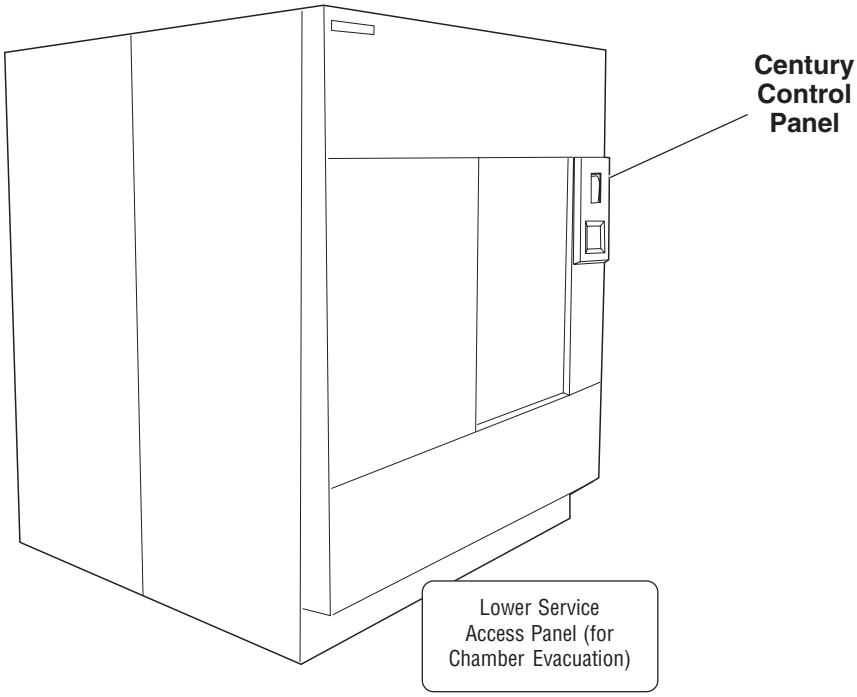


Figure 3-1. Vented Closures

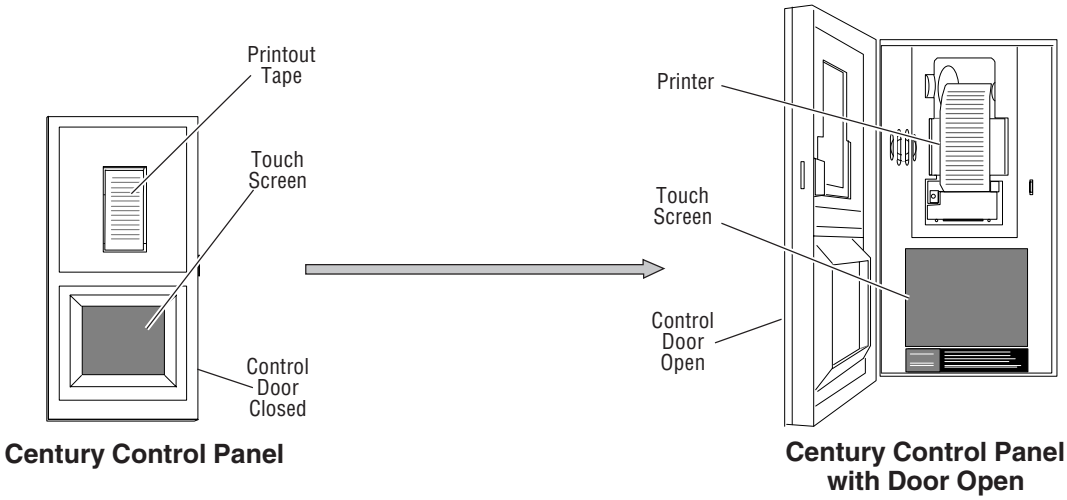


Hinged-Door Sterilizer



Horizontal-sliding Door Sterilizer
(Cabinet Configuration Shown)

Figure 4-1. Amsco® Century™ Medium Sterilizer 26 x 37.5" (660 x 950 mm)



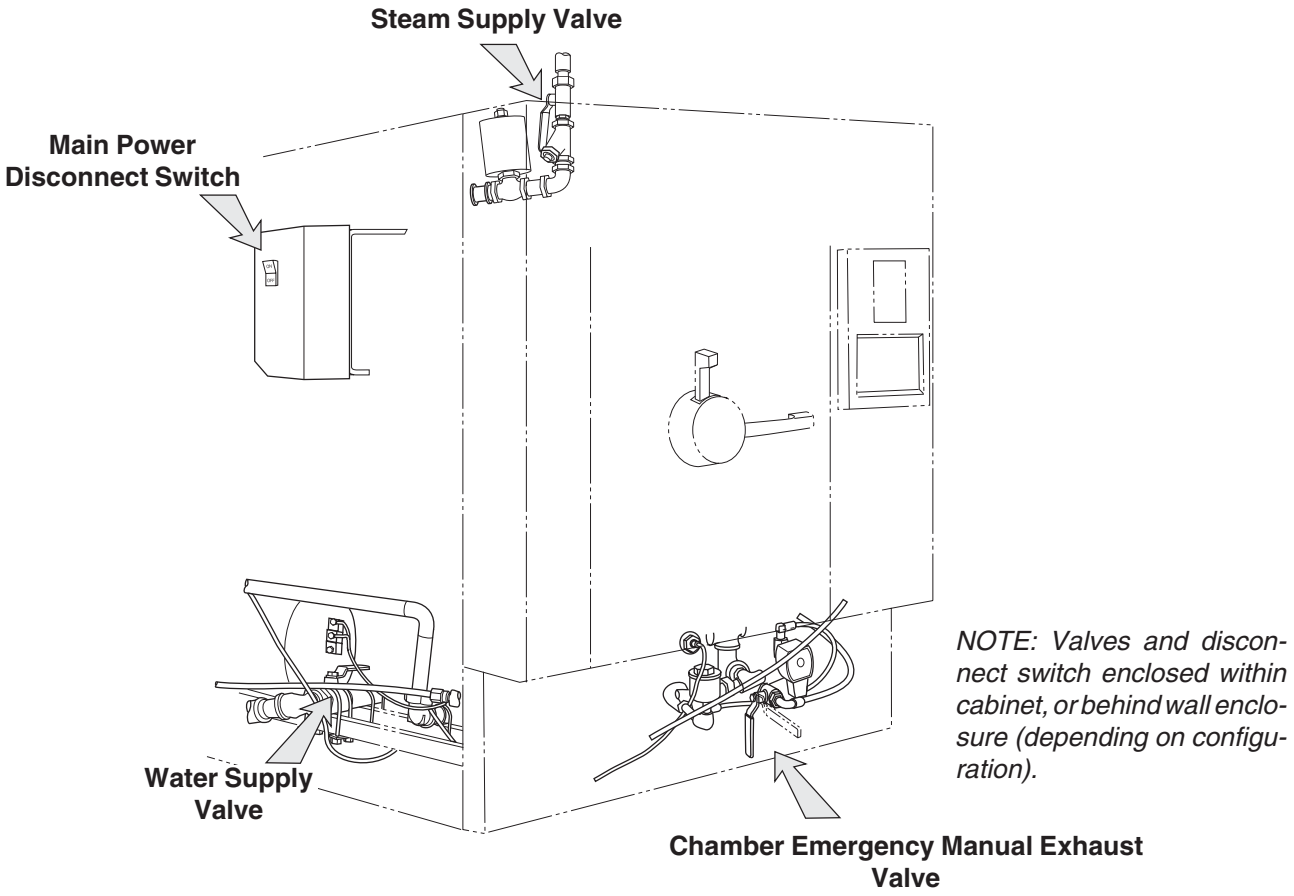


Figure 4-2. Century Medium Sterilizer Controls

4.1 General

Use this manual to become familiar with control locations and functions before operating the sterilizer (refer to Figure 4-1 through 4-3). The controls for this sterilizer are contained within the control touch screen. Control touch pads appear on the screen as needed during each operation. Available controls change as the sterilizer steps through different operations.

4.2 Main Sterilizer and Cycle Controls

- **Main Power Disconnect Switch** (refer to Figure 4-2) – Located at the side of the sterilizer on the main control box, this switch disconnects power to the control. Under normal operation, this switch is left in the ON position at all times, and accessed only when servicing the sterilizer.
- **Steam Supply Valve** – This is located behind the side access panel (or within the wall enclosure), above the chamber. Refer to Figure 4-2. Ensure this is in the open position before trying to operate the sterilizer.
- **Water Supply Valve** – This is located behind the side access panel (or within the wall enclosure, below the chamber. Refer to Figure 4-2. Ensure this is in the open position before trying to operate the sterilizer.
- **Chamber Emergency Manual Exhaust Valve** – Used only in emergency situations, the valve is to be left in the closed position for normal operation.

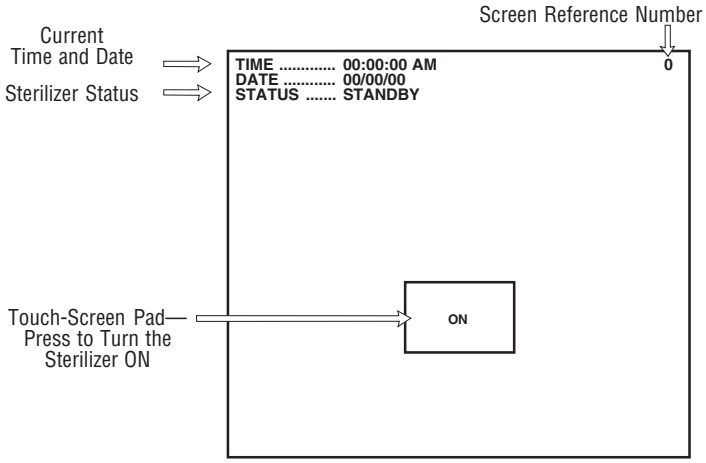


Figure 4-3. Standby Screen

- **Sterilizer Control Touch Pad** –This is visible on the control touch screen whenever the sterilizer is in Standby mode. Refer to Figure 4-3.

  NOTE: Touch-screen pads respond to very slight pressure, and only need to be pressed lightly.

  The sterilizer enters operating mode when the ON touch pad is pressed. This touch pad switches the sterilizer control between Standby and Ready conditions (Standby mode is usually used at night when the sterilizer is not being operated – steam is turned off and machine cools, saving energy).

A screen reference number appears in the upper right corner of each display. Numbers are used for reference only, and do not relate to the operating sequence of the screen.

4.3 Control Displays

Control displays can be divided into two categories, those occurring when the sterilizer is “out-of-cycle” and those occurring when the sterilizer is “in-cycle."

Typical out-of-cycle and in-cycle displays are shown in Figure 4-4.

- Out-of-cycle displays are used to start cycles, or set up and adjust sterilizer operation. With the exception of the cycle starting displays, most out-of-cycle displays will only be used occasionally. Detailed instructions for adjusting the sterilizer operating parameters are in Section 6 of this manual.
- Generally, when the sterilizer is in-cycle, displays appear automatically and, unless an abnormal condition occurs, require no special attention or instructions. In-cycle displays tell the operator at what temperature and pressure the sterilizer chamber is operating, show the current cycle phase, and indicate when the processing cycle is complete. For more details about operating cycles, refer to Section 5 of this manual.

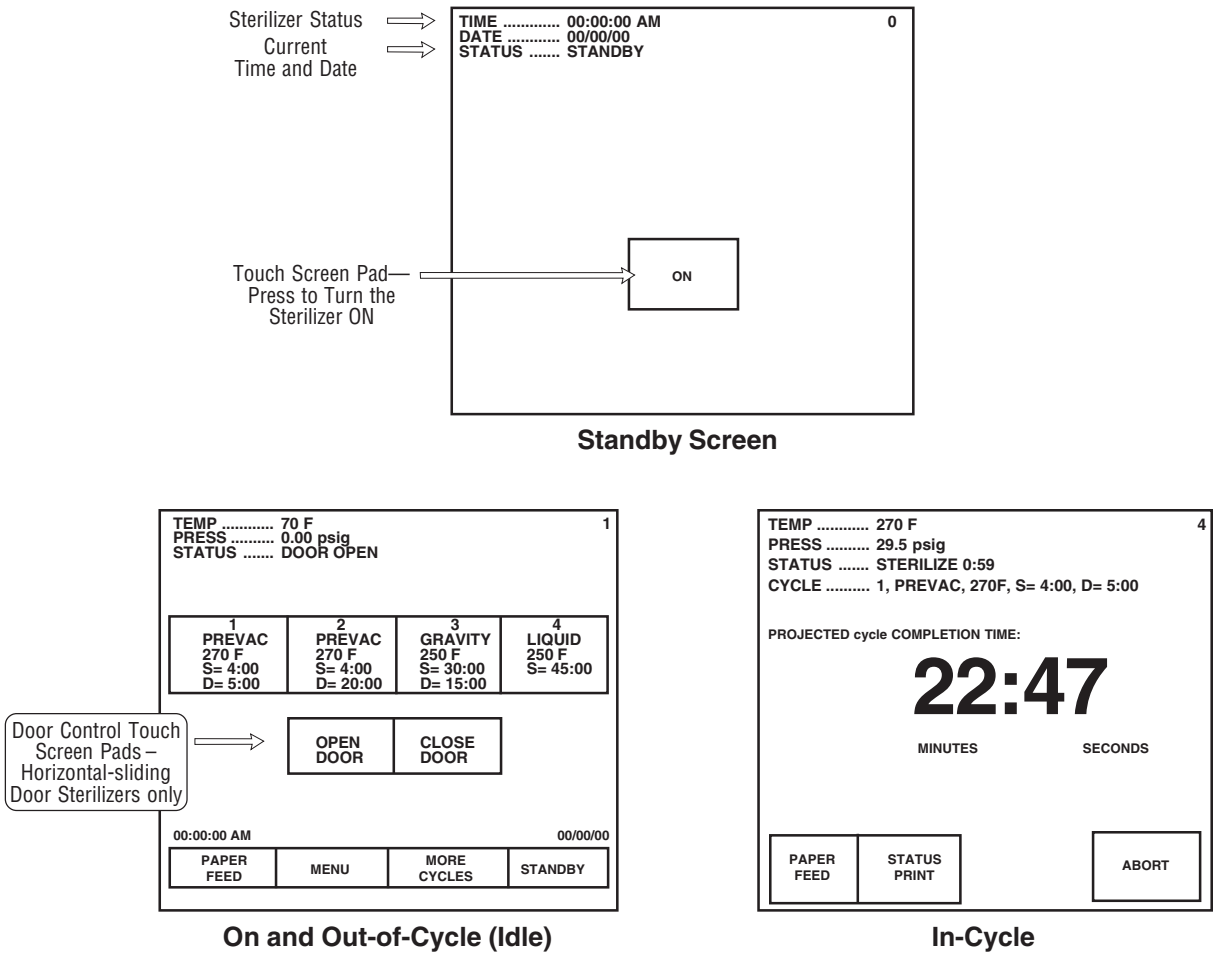


Figure 4-4. Typical In- and Out-Of-Cycle Displays

4.4 Alarm Displays

Alarm displays tell operators and technicians when the sterilizer is experiencing an abnormal condition. Alarm conditions can be caused by failure of utility supplies or sterilizer components. *SECTION 8, TROUBLESHOOTING,* details the steps an operator can take to solve most alarm conditions. Typical alarm displays are shown in Figure 4-5.

When an alarm occurs during cycle operation, a display appears on the screen, accompanied by an audible tone. This display indicates the problem as determined by control sensors, and lists a brief troubleshooting list. The operator should follow the instructions on the screen, if possible. If these instructions fail to clear the alarm, consult your departmental supervisor or a trained service technician before using the sterilizer further.

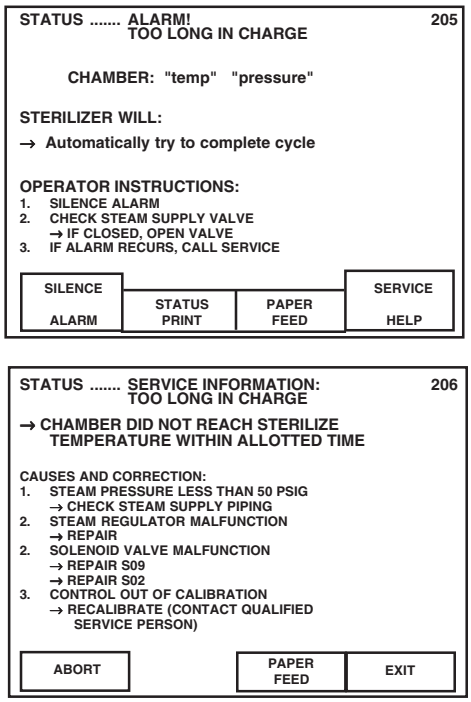


Figure 4-5. Typical Alarm Displays

4.5 Operating End Control Panel

A sterilizer equipped with two doors will also be equipped with two control panels. The control panel at the loading door of the sterilizer is referred to as the "operating end control" (OE control); the control panel located at the unloading door is referred to as the "non-operating end control" (NOE control).

A single-door sterilizer is equipped with an "operating end control" only.

NOTE: Except for the presence of the printer (which is only present at the operating end of the unit), control panels at both ends of the unit are similar and each can be used to start or abort the sterilizer.

The operating end control panel (see Figure 4-6) is used to:

- Open and Close door. (Horizontal-sliding door models, only.)
- Select and start cycles.
- Abort cycles.
- Set cycles and cycle values.
- Obtain status printouts (see “Printer” paragraph later in this section).

The operating end control includes a printer for cycle documentation.

Cycle status and control messages are shown on a 30 line x 40 column graphics display. Cycles can be started or aborted using the touch screen pads. Cycles and cycle values can be set using the Change Values procedure (accessible from the sterilizer MENU screen). If changing cycle values becomes necessary, refer to Section 6 of this manual.

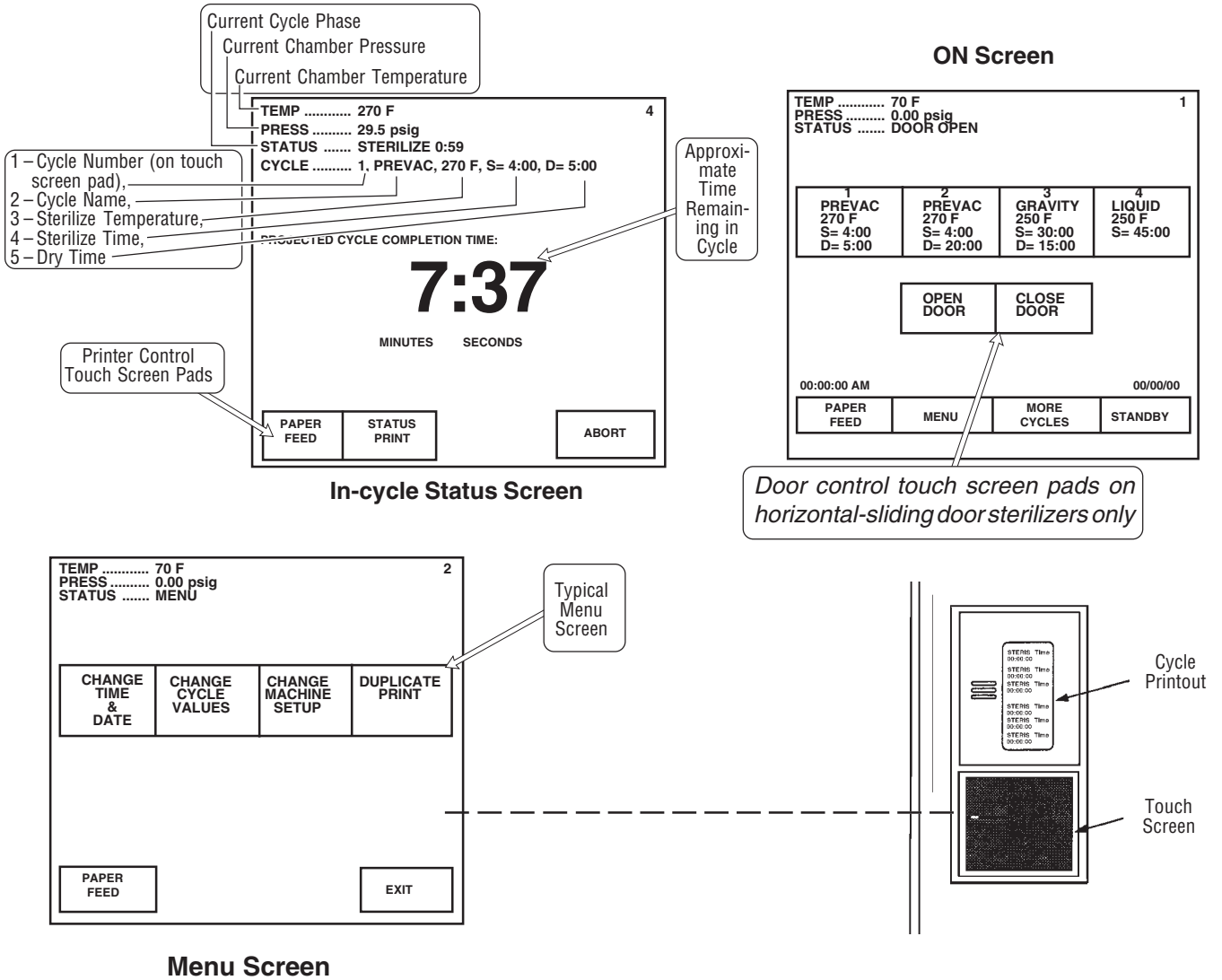


Figure 4-6. Operating End Control Panel

4.6 Cycle Selection Touch-screen Pads

Four cycle selection touch pads are shown on the screen in Figure 4-7. These pads display the basic parameters of the cycle (cycle name, sterilization exposure temperature, sterilization exposure time, and dry time), additional cycles may be selected by pressing MORE CYCLES. Details on individual cycles are in *SECTION 5, STERILIZER OPERATION*.

The Amsco Century Medium Steam Sterilizer 26 x 37.5" (660 x 950mm) control can be programmed to retain values for up to 12 separate cycles. The first four cycles (1 through 4) are the factory default cycles and are routinely displayed on screen #1. Up to eight additional cycles can be programmed and displayed. It is the responsibility of the healthcare facility to validate additional cycles. Reference AAMI for guidelines and standards for a guide to validating sterilization cycles and to ensure that proper sterility assurance level (SAL) as well as moisture acceptance criteria are met.

Dart® (Bowie-Dick) and Leak Test cycle parameters are fixed; the buttons for these cycles do not display values for exposure temperature, exposure time or drying time.

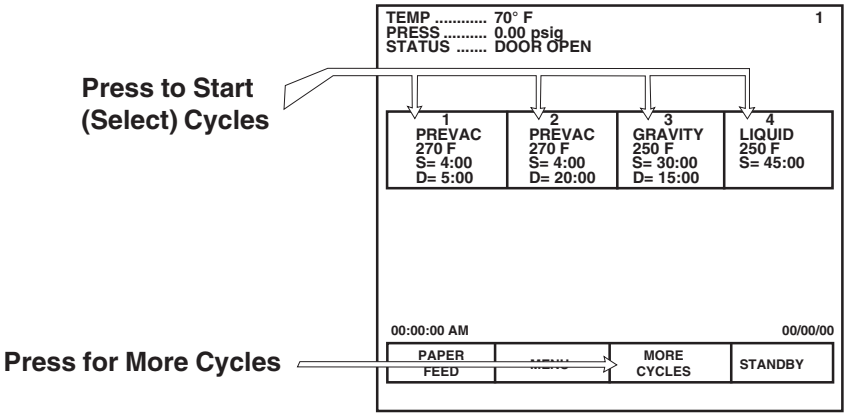


Figure 4-7. Cycle Selection Touch Pads

4.6.1 Values Touch-Screen Pads

The values touch-screen pads are accessed through the MENU screen by pressing CHANGE CYCLE VALUES (refer to Figure 4-6). These pads are used for changing the operating values used in cycles, changing the cycles displayed on the cycle selection menus and for changing the operating settings of the sterilizer. Instructions for changing sterilizer cycle parameters are in Section 6 of this manual.

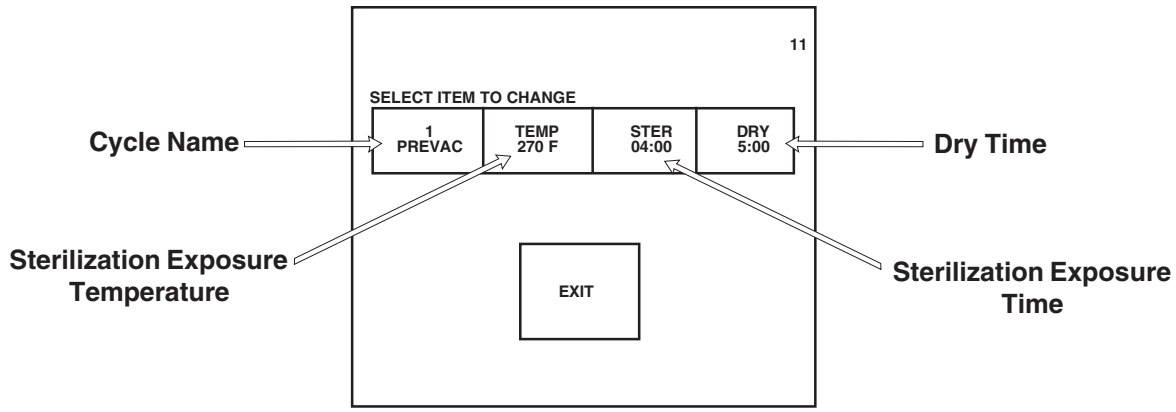


Figure 4-8. Values Touch Screen Pads

4.6.2 Abort Touch-Screen Pad

The Abort touch-screen pad is used to end a cycle before it finishes normally. A cycle only needs to be aborted if an abnormal condition or a control problem develops during the cycle. Pressing Abort causes the sterilizer chamber to depressurize (if pressurized), or Air Break (if in vacuum); the door seal deactivates, the control prompts the operator to open the door, and the sterilizer returns to its normal out-of-cycle state. If an abnormal condition persists after fully aborting the cycle, contact your supervisor or a qualified service technician before trying to operate the sterilizer further.

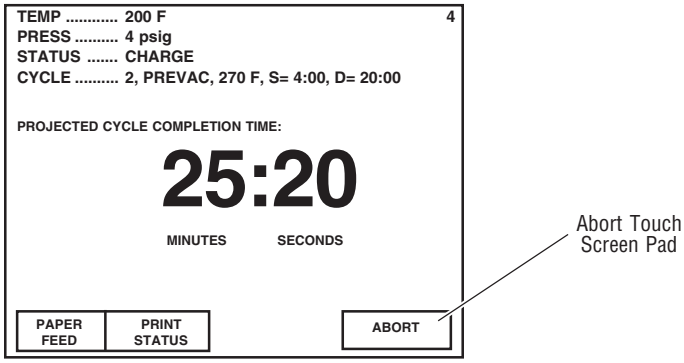


Figure 4-9. Cycle Abort Touch-Screen Pad

4.7 Printer

Refer to Figure 4-1.

Printer records all cycle data on 2-1/4" (57 mm) wide single-ply paper. See *SECTION 7, ROUTINE MAINTENANCE* for paper changing procedure. Printer functions controlled by touch-screen pads are as follows:

- **Paper Feed** – Press to feed out paper from the roll stored inside the control. Accessible during all phases of operation, including alarm conditions. Press and hold for continuous feed.
- **Duplicate Print** – Press to obtain a complete duplicate printout of the last previously run cycle (when unit is not in cycle). This touch pad is only visible on the screen during Complete and Change Values menu. The Duplicate Print touch screen pad is not visible upon first power-up of the day.
- **Status Print** – Press to obtain a printout of current cycle phase and conditions (when unit is in cycle). This touch pad is only visible during cycle operation.
- **Print Values** – Press to obtain a printout of all currently set cycles and cycle values. Only accessible when the unit is not in cycle. This touch screen pad appears on Change Values menu only.

4.8 Printouts

Refer to Figure 4-10.

The printout reports useful information about each cycle the sterilizer runs. This includes the load number, which is a unique identifying code. Each load number is printed in the following format: a two-digit month (e.g., April = 04), a two-digit day (e.g., twenty eighth day = 28) and a two-digit daily cycle count (e.g., first cycle = 01, second = 02, etc.).

- Example of a complete load number: "042801" (April 28, first cycle).

During the cycle, status lines on the printouts show the time the line was printed, chamber temperature and the level of vacuum or pressure in the chamber. Each status line also begins with a letter code. This code indicates during which cycle phase the print line occurred, or what kind of event caused the print line to occur.

Refer below to see other features of the printout.

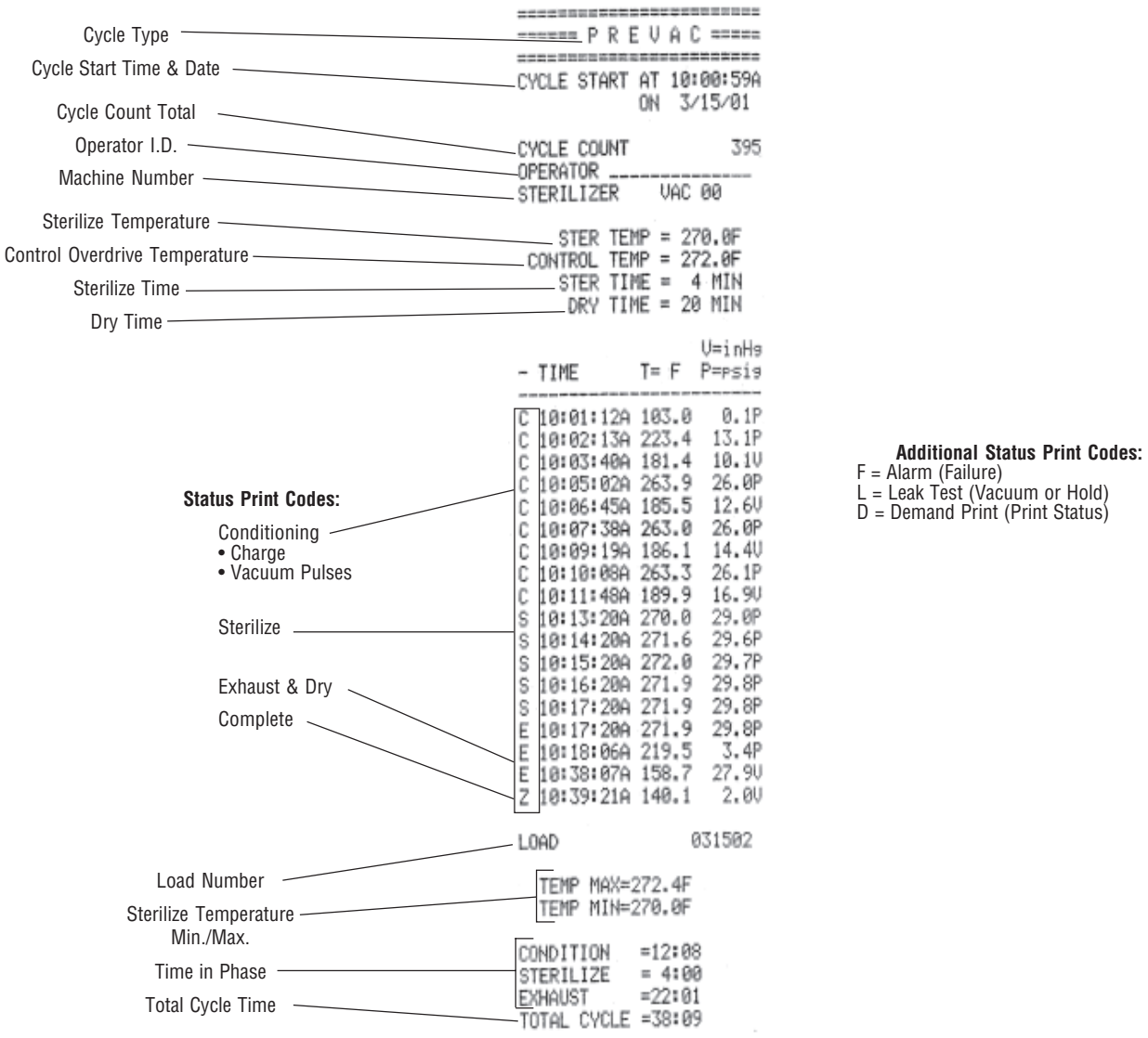


Figure 4-10. Typical Printout

4.9 Hinged-Door Operation

1. Unlock door by moving door lock control toward the right (refer to Figure 4-11).
2. Grasp door pull handle and swing door open.

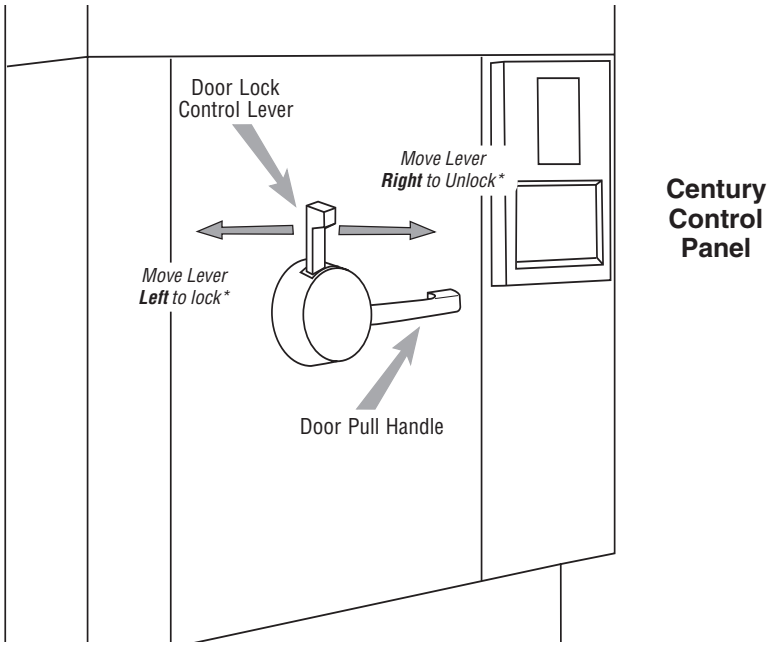


Figure 4-11. Hinged Door Operation

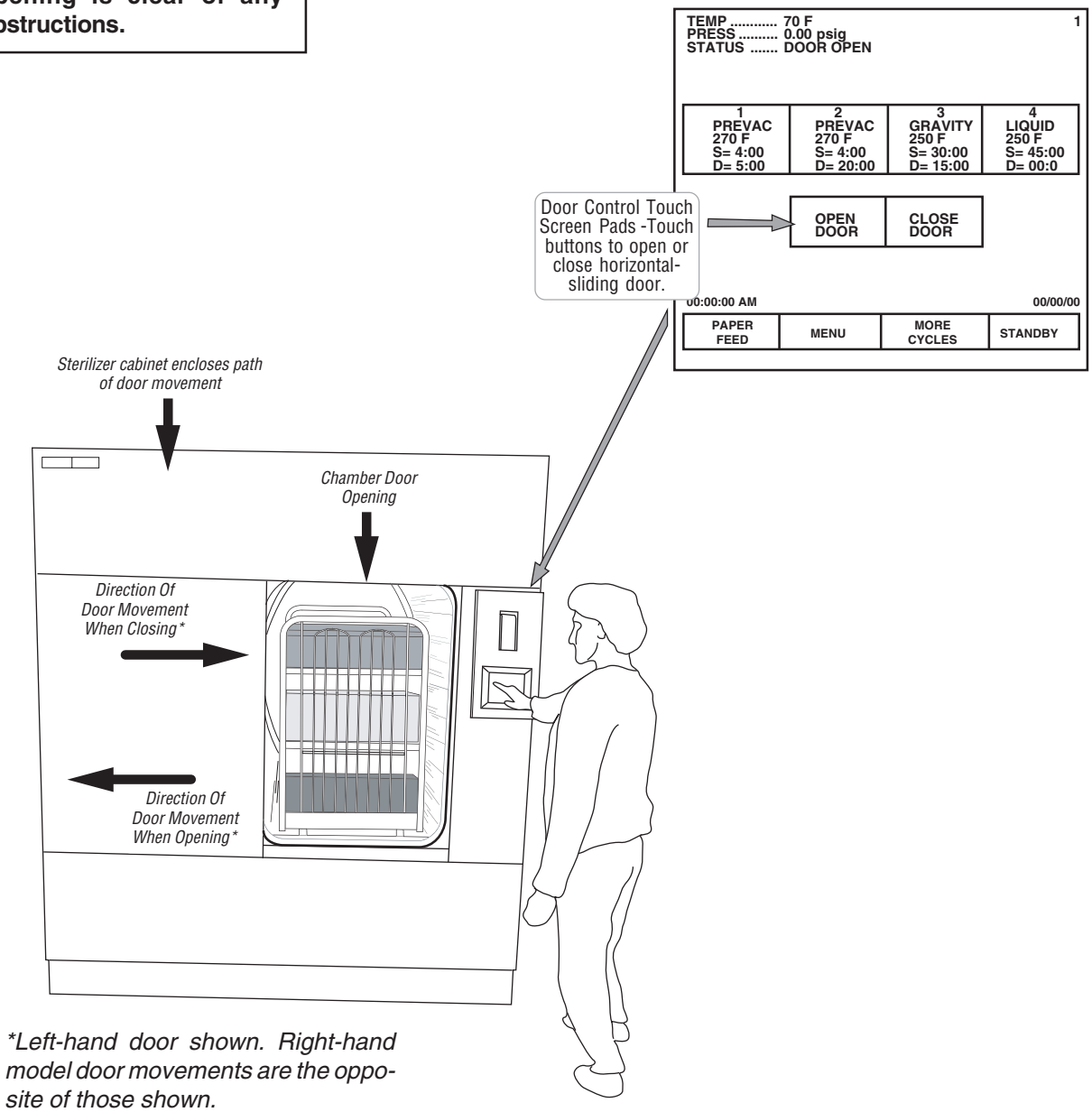
Important: Keep chamber door closed when the sterilizer is not in use.

4.10 Horizontal-sliding Door Operation

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door keep hands and arms out of the door opening and make sure opening is clear of any obstructions.

Press door control touch-screen pads (OPEN DOOR or CLOSE DOOR) to operate the horizontal-sliding door.

Important: Keep chamber door closed when the sterilizer is not in use.



**Left-hand door shown. Right-hand model door movements are the opposite of those shown.*

Figure 4-12. Horizontal-sliding Door Operation

5.1 Before Operating the Sterilizer

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING – SLIPPING HAZARD: To prevent falls keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

Operate sterilizer by referring to the appropriate cycle description in this section. The information in *SECTIONS 5.1* through *5.7* are general instructions that apply to all cycle operations.

1. Press ON touch-screen pad on the sterilizer control display.
   - The printer records the time and date that the power is turned ON.
2. Open chamber door.
   a. Check that drain strainer is clean and in place and that chamber interior is clean. See *SECTION 7*, *ROUTINE MAINTENANCE,* if cleaning is necessary.
   b. Close chamber door.
3. Under normal operation utility supply valves remain open. Verify valves are in OPEN position (see Figure 5-1).
4. Open control access door.
   a. Check printer paper roll.
   - A colored warning stripe is visible when roll is near its end.
   b. See *SECTION 7.2.2., CHANGING PAPER ROLL* in *SECTION 7, ROUTINE MAINTENANCE,* if a new paper roll is needed.
5. Run required test cycle:
   » Run a Dart® (Bowie-Dick) test at least once a day to document the removal of residual air from sample challenge loads.
   » Run a vacuum leak test at least once each week to measure the integrity of the pressure vessel and associated piping. This test helps assure that air is not being admitted to the sterilizer chamber during vacuum draw downs.

   NOTE: Always run a warm-up cycle before running the daily Dart (Bowie-Dick) test or weekly vacuum leak test.

   Press MORE CYCLES to access the Vacuum Leak Test and DART (Bowie-Dick) cycle selector touch-screen pads. For instructions on running these tests refer to cycle descriptions later in this section. Refer also to *SECTION 3, TECHNIQUES OF STERILIZATION.*
6. Once these tests have been run (if necessary), proceed to loading the sterilizer and running cycles.

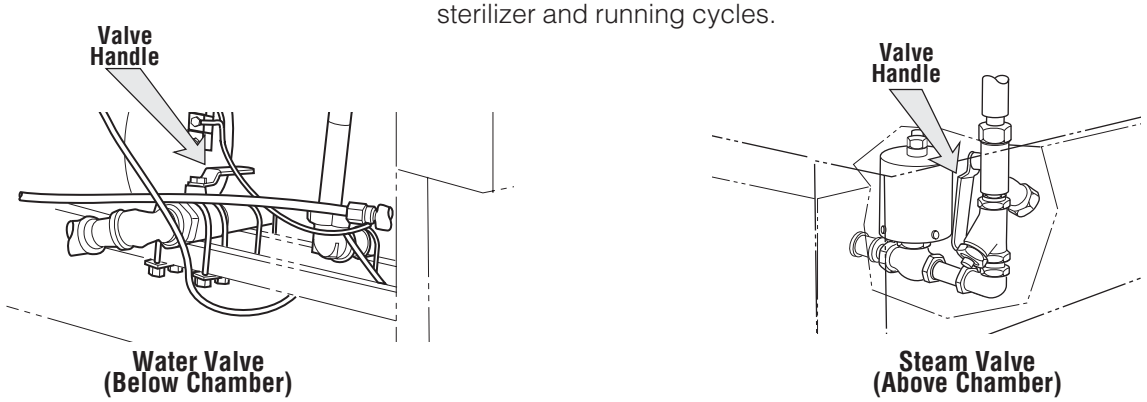


Figure 5-1. Utility Supply Valves

Table 1. Factory-Set Cycles and Cycle Values

Prevacuum Sterilizer Cycles and Cycle Values (Table 5-1A)

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. PREVAC	270°F (132°C)	4 MIN.	5 MIN.	Single Fabric Pack	ST-8
2. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. Fabric packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
3. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
4. LIQUID	250°F (121°C)	45 MIN.	0 MIN.	*Refer to **Table 5-3** for guidelines.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 5-2** for recommended quantities.*	ST-8

Steam Flush Pressure-Pulse Sterilizer Cycles and Cycle Values (Table 5-1B)

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. WRAP/ SFPP	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Non-porous Goods, only. *Refer to **Table 5-2** for recommended quantities*	ST-8
2. SFPP	270°F (132°C)	4 MIN.	20 MIN.	Fabric Packs *Refer to Table 5-2 for recommended quantities.*	ST-8
3. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Fabric Packs. *Refer to **Table 5-2** for recommended quantities*	ST-8
4. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 5-2** for recommended quantities*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 5-2** for recommended quantities*	ST-8

Test Cycles for All Units	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
6. Leak Test[1]	270°F (132°C)	N/A	N/A	N/A	ST-8
7. DART Test[1]	270°F (132°C)	3-1/2 MIN.	1 MIN.	DART or Bowie-Dick Test Pack	ST-8
8. DART Warm-up[1]	270°F (132°C)	3 MIN.	1 MIN.	N/A	N/A

[1] *Not adjustable.*

Table 5-2. Recommended Loads by Sterilizer Chamber Size [1]

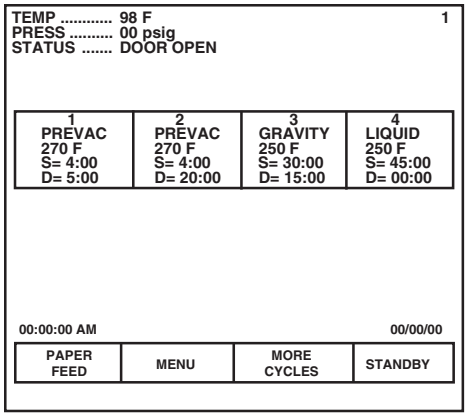
Chamber Size	Wrapped Instrument Trays	Fabric Packs
26 x 37.5 x 36" (660 x 950 x 910)	9	18
26 x 37.5 x 48" (660 x 950 x 1220)	12	30
26 x 37.5 x 60" (660 x 950 x 1520)	15	36

[1] *Refer to **Tables 5-1A** and **5-1B** to determine cycle use guidelines.*

Table 5-3. Liquid Cycle Processing Guidelines

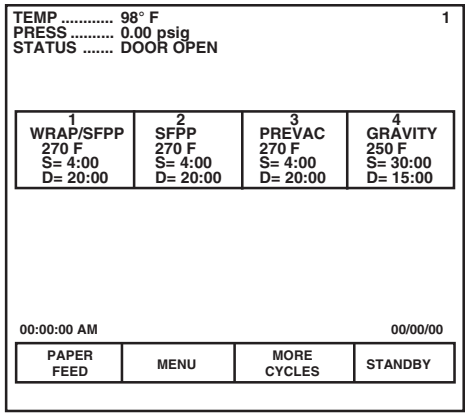
Number of Containers	Volume of Liquid in One Container	Minimum Recommended Sterilize Time at 250°F (121°C) in minutes
3	1000 mL	45

Prevacuum Sterilizer Menu Screen



Cycle Selection Touch Pads

Steam Flush Pressure Pulse Sterilizer Menu Screen



5.2 Preparing Loads for Sterilization Cycles

Before sterilization, all materials must be thoroughly cleaned.

The Amsco® Century™ Medium Steam Sterilizer 26 x 37.5" (66 x 950 mm) chamber holds commonly used wrapped or unwrapped instruments and equipment.

1. Wrappers may be made of 100% cotton, 140 thread count, two-ply fabric, and must be laundered; alternatively, use commercially available, non-woven disposable wrappers.
2. Limit the size and density of each muslin pack. [Maximum size: 12 x 12 x 20" (305 x 305 x 508 mm); Maximum weight: 12 lbs (5.4 kg). No pack should have a density in excess of 7.2 lbs/ft^3 (115 kg/m^3).] This ensures complete steam penetration, and minimizes moisture retention.
3. Limit the weight of wrapped instrument sets to 17 lbs (7.7 kg) to minimize moisture retention.
4. Limit the weight of basin sets to 7 lbs (3.2 kg).

5.3 Guidelines for Placement of Various Loads

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of any obstructions.

Refer to AAMI ST-46 for load placement guidelines.

1. Open the sterilizer chamber door.

   NOTE: If a cycle has been run, sterilizer and shelves or loading car may be hot.

   NOTE: Wear clean gloves and use clean towels as "pot holders" when carefully placing the load/tray(s) on the chamber shelves or loading car.

2. Place all packs on edge, and arrange load to allow for maximum steam exposure so that there is minimal resistance for steam passage through the load.
3. Place utensils and treatment trays on their edges so that they will be sterilized and properly dried.
4. Place instrument sets in trays that have a perforated or mesh bottom. Place flat for sterilization.
5. In mixed loads of fabrics and hard goods, place the hard goods on lower shelf. This reduces wetting of fabric packs from condensate dripping from a hard goods load.
6. DO NOT OVERLOAD STERILIZER. Allow for steam penetration between packs. Avoid contact of load components with the wall of the chamber.
7. After placing load in chamber, close the chamber door. The sterilizer is now ready to run a cycle. Proceed to appropriate cycle description in this section.
8. Materials capable of holding water, such as solid-bottomed pans, basins and trays, should be positioned so that they are oriented in the same direction and so that condensate can be eliminated.

Important: Refer to *SECTION 3, TECHNIQUES OF STERILIZATION*, for additional information regarding pack preparation, loading and placement.

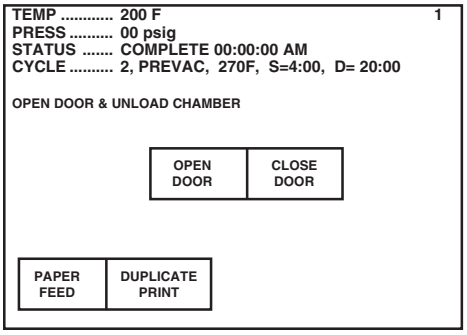
5.4 Unloading the Sterilizer

WARNING – BURN HAZARD: Sterilizer and shelves will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – SLIPPING HAZARD: To prevent falls, keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

At the end of a cycle, when end-of-cycle tone sounds and display shows:



. . . open the chamber door.

NOTE: Wear clean gloves and use clean towels as "pot holders" when carefully removing load/tray(s) from the sterilizer shelves or loading car.

NOTE: Never place a sterilized tray on a solid shelf or cold surface. Once the tray has cooled, it can be placed on a wire shelf.

1. Remove the load from chamber shelf (shelves). Avoid unnecessary handling.
2. Visually check outside wrapper for dryness. If there are water droplets or visible moisture on the exterior of the package, or on the tape used to secure it, the pack or instrument tray is considered **unacceptable.**
3. To prevent condensation, transfer the load to a surface which is well-padded with fabric. **Do not place load on a cold surface.** Be sure that no air conditioning or cold air vents are in close proximity.
4. Remove packs or instrument trays from the padded surface when they have reached ambient (room) temperature. Depending on the items and environment of the area, this may take a minimum of 1 hour.

Important: After removing load(s) from the chamber, close the chamber door and keep the chamber door closed to minimize utility consumption.

5.5 Loading Car Instructions: Loading

1. Open sterilizer door.
2. Verify that loading car is securely fastened to the transfer carriage.
3. Align the front end of the transfer carriage with the end of the sterilizer. (See Figure 5-2).
4. Move carriage forward until latches engage with mating holes in chamber end frame.
5. Verify that transfer carriage is securely latched by pulling transfer carriage backward (transfer carriage should remain stationary).
6. Once transfer carriage is securely latched, release the loading car from the transfer carriage by lifting the carriage lock.
7. Carefully push the loading car off the transfer carriage and fully into the sterilizer chamber.
8. Disengage transfer carriage latches from end frame by pushing carriage latch knob.

9. Back the transfer carriage away from the sterilizer.
10. Close the chamber door.
11. The sterilizer is now ready to run a cycle. Proceed to appropriate cycle description found in *SECTION 5, STERILIZER OPERATION.*

5.6 Loading Car Instructions: Unloading

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

1. Open chamber door.
2. Move transfer carriage forward until latches engage with track inside chamber.
3. Verify that transfer carriage is latched to chamber end ring by pulling transfer carriage backward (transfer carriage should remain stationary).
4. Once transfer carriage is securely latched, grasp the loading car handle and carefully pull loading car from chamber onto transfer carriage until transfer carriage latch engages to loading car.
5. Disengage transfer carriage latches from track inside chamber by pushing carriage latch knob.
6. Close the chamber door.
7. Transfer load from sterilizer area.

Figure 5-2. Align Loading Car with Chamber Opening

5.7 Loading/ Unloading Sterilizer: Rack and Shelves

WARNING – BURN HAZARD: Sterilizer, rack/ shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – SLIPPING HAZARD: To prevent falls keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

If sterilizer is equipped with the rack and shelves option, refer to instructions below and Figure 5-3.

1. Open chamber door.
2. Transfer load to shelves in chamber. Shelves slide out halfway to facilitate loading.
3. After loading the shelves, slide them to closed position to verify shelf does not interfere with door operation (both doors if double-door sterilizer).
4. Close chamber door(s).
5. The sterilizer is now ready to run a cycle. Refer to appropriate cycle description in Section 5 of this manual.
6. Following successful completion of the sterilization cycle, unload the sterilizer as follows:
   a. Open chamber door.
   b. Remove load from chamber.
   c. Slide shelves into chamber, verifying that position does not interfere with door operation.
   d. Close chamber doors.
   e. Transfer load to destination.

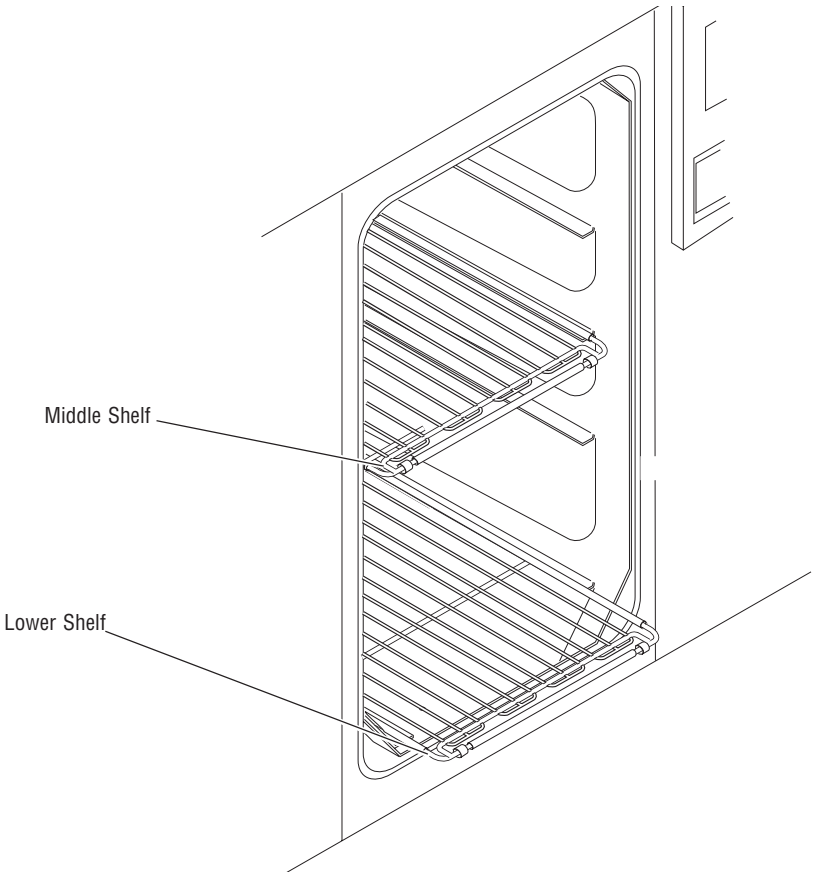


Figure 5-3. Front Elevation Drawing of Loading Shelves

5.8 Sterilizer (Factory) Cycle Settings

Amsco Century Medium Steam Sterilizers are shipped with the factory-set cycles and cycle values listed in **Table 5-1A** and **5-1B**.

5.9 Prevacuum Sterilizer Cycles

Amsco Century Medium Steam Sterilizers are shipped with the factory-set cycles. The cycle sequence for these cycles are given in *Section 5.9.* Refer below and to **Table 5-1** for factory set, qualified cycle settings.

NOTE: The 270°F Prevacuum cycle described in Section 5.10, the 250°F Gravity cycle described in Section 5.11, and the 275°F Prevacuum cycle described in Section 5.12 are common to both SFPP and Prevacuum configuration sterilizers.

Important: The sterilization cycles listed in **Tables 5-1A** and **5-1B** have been validated using techniques documented in AAMI ST-8. If different cycle parameters (sterilize time and dry time only) other than those in **Tables 5-1A** and **5-1B** are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI guidelines/standards for a guide to validating sterilization cycles and to ensure that proper sterility assurance level (SAL) as well as moisture retention acceptance criteria are met.

NOTE: Contact STERIS® for information on a wide range of education/training programs designed to meet the educational needs of healthcare industries.

Prevacuum Sterilizer Cycles and Cycle Values (Table 5-1A)

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. PREVAC	270°F (132°C)	4 MIN.	5 MIN.	Single Fabric Pack	ST-8
2. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. Fabric packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
3. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
4. LIQUID	250°F (121°C)	45 MIN.	0 MIN.	*Refer to **Table 5-3** for guidelines.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 5-2** for recommended quantities.*	ST-8

[*] *Five minute Dry Time can be used for processing a single fabric pack.*

5.10 Prevac Cycle 270°F (132°C)

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – SLIPPING HAZARD: To prevent falls, keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

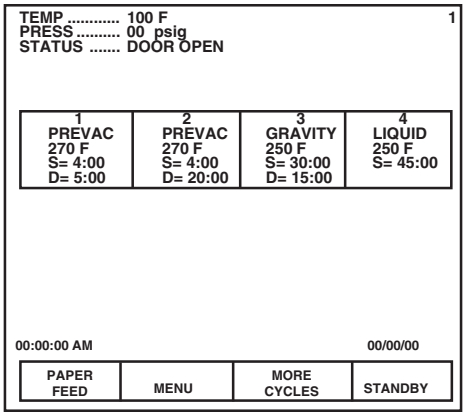
WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

The 270°F (132°C) cycle is used for sterilizing double-wrapped instrument trays or fabric packs.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. Press PREVAC touch-screen pad to start the Prevacuum cycle. Refer to **Table 6-2** for descriptions of cycle use.
4. Sterilizer automatically progresses through cycle, as follows:

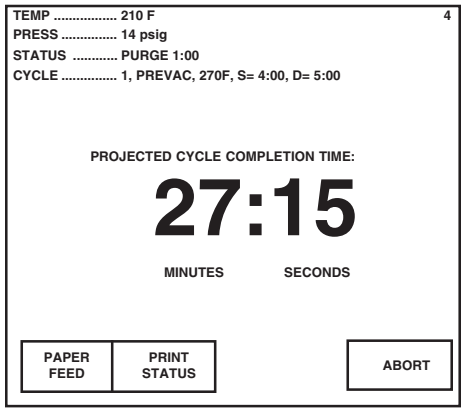
   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES in this section.

ACTIVATE SEAL – Steam enters the door seal, pressing it against inside surface of the door.



PURGE – Chamber is purged with steam. Start of Condition is printed.

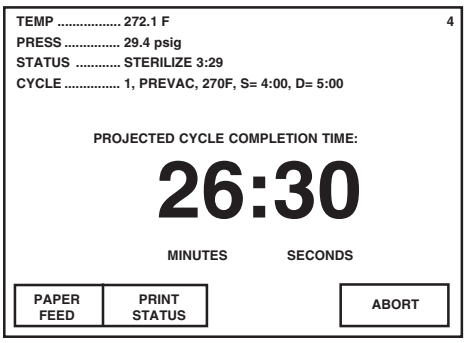
NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.



PRESSURE/VACUUM PULSES #1 – #4 – Vacuum point is printed and pressure/vacuum pulse is repeated.

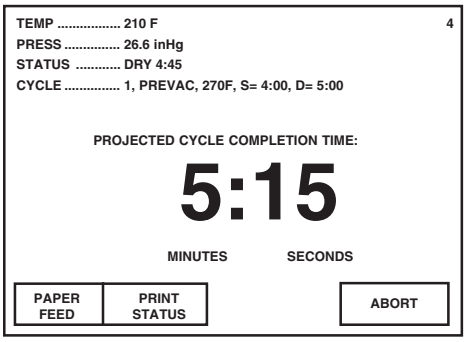
CHARGE – Chamber is charged with steam. Start of steam charge is printed.

STERILIZE – Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every minute.



FAST EXHAUST — Start of exhaust is printed and chamber is exhausted to 4 psig.

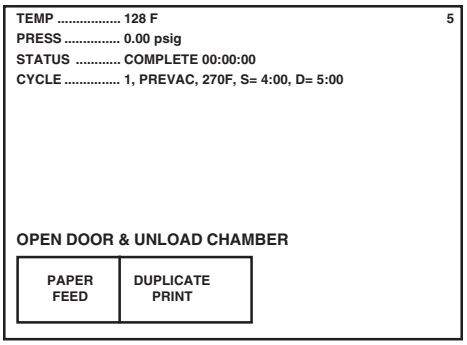
DRY — Start of dry is printed and display counts down dry time remaining.



AIR BREAK — Chamber is returned to atmospheric pressure.

RETRACT SEAL — A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE — Complete tone sounds. Cycle summary and end of cycle messages are printed.

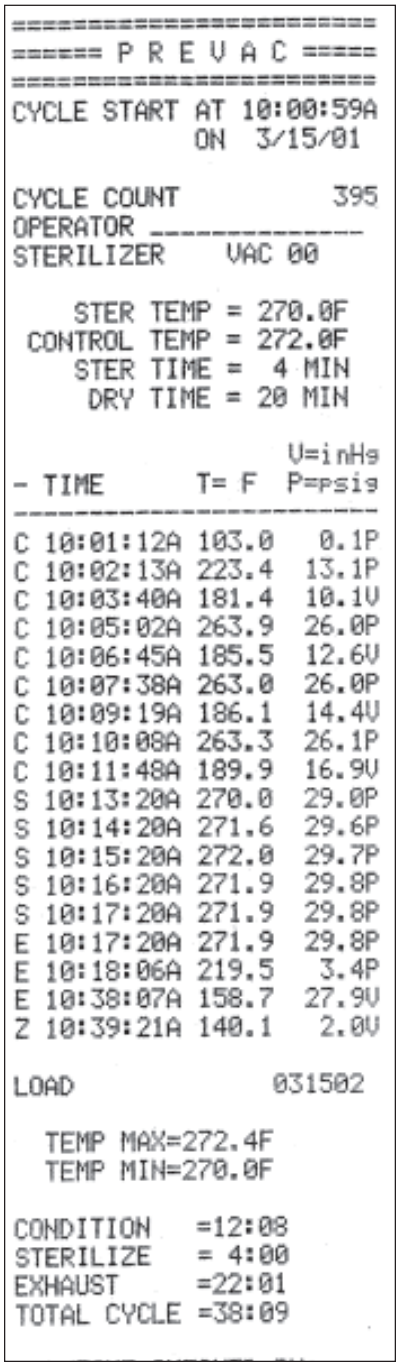


5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section for procedures to remove load).

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING–BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.



```
========================
====== P R E V A C =====
========================
CYCLE START AT 10:00:59A
            ON  3/15/01

CYCLE COUNT           395
OPERATOR _______________
STERILIZER     VAC 00

    STER TEMP = 270.0F
 CONTROL TEMP = 272.0F
    STER TIME =  4 MIN
     DRY TIME = 20 MIN

                      V=inHg
- TIME       T= F   P=psig
------------------------
C 10:01:12A 103.0    0.1P
C 10:02:13A 223.4   13.1P
C 10:03:40A 181.4   10.1V
C 10:05:02A 263.9   26.0P
C 10:06:45A 185.5   12.6V
C 10:07:38A 263.0   26.0P
C 10:09:19A 186.1   14.4V
C 10:10:08A 263.3   26.1P
C 10:11:48A 189.9   16.9V
S 10:13:20A 270.0   29.0P
S 10:14:20A 271.6   29.6P
S 10:15:20A 272.0   29.7P
S 10:16:20A 271.9   29.8P
S 10:17:20A 271.9   29.8P
E 10:17:20A 271.9   29.8P
E 10:18:06A 219.5    3.4P
E 10:38:07A 158.7   27.9V
Z 10:39:21A 140.1    2.0V

LOAD                031502

  TEMP MAX=272.4F
  TEMP MIN=270.0F

CONDITION   =12:08
STERILIZE   = 4:00
EXHAUST     =22:01
TOTAL CYCLE =38:09
```

Figure 5-4. Typical Printout of a Prevac Cycle

5.11 Gravity Cycle

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

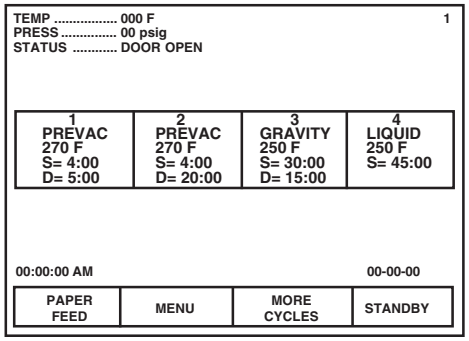
WARNING – SLIPPING HAZARD: To prevent falls keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

This cycle is used for sterilizing fabric packs.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. To start the Gravity cycle, press the appropriate GRAVITY touch-screen pad. Refer to **Table 5-1** for descriptions of cycle use.
4. Sterilizer automatically progresses through cycle, as follows:

   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES in this section.

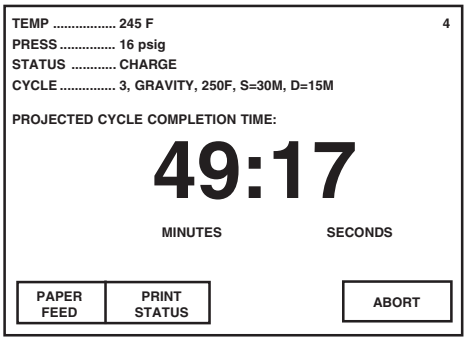


ACTIVATE SEAL – Steam enters the door seal, pressing it against inside surface of the door.

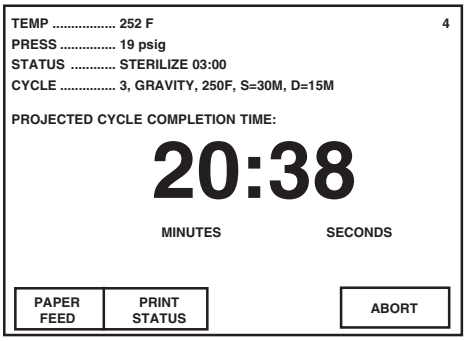
PURGE – Chamber is purged with steam. Start of condition is printed.

NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.

CHARGE – Chamber is charged with steam. Start of steam charge is printed.

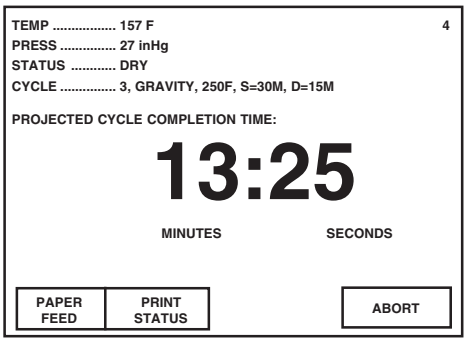


STERILIZE – Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every minute.



FAST EXHAUST – Start of exhaust is printed and chamber is exhausted to 4 psig.

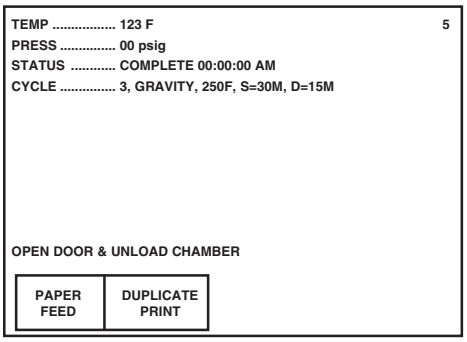
DRY – Start of dry is printed and display counts down dry time remaining.



AIR BREAK – Chamber is returned to atmospheric pressure.

RETRACT SEAL – A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE – Complete tone sounds. Cycle summary and end of cycle messages are printed.

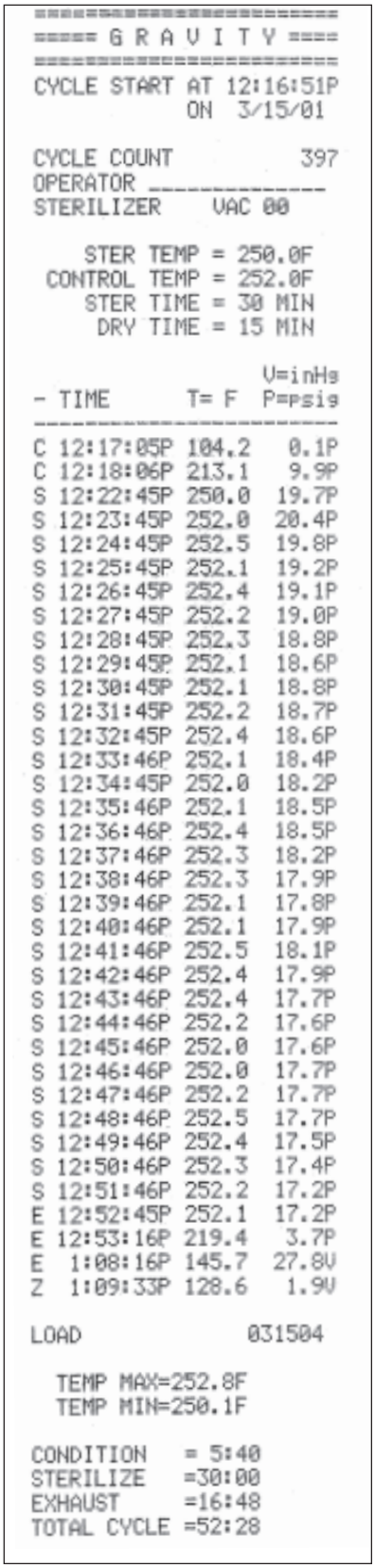


5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section for procedures to remove load).

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.



```
========================
===== G R A V I T Y ====
========================
CYCLE START AT 12:16:51P
           ON  3/15/01

CYCLE COUNT          397
OPERATOR _____________
STERILIZER    VAC 00

    STER TEMP = 250.0F
 CONTROL TEMP = 252.0F
    STER TIME = 30 MIN
     DRY TIME = 15 MIN

                    V=inHg
- TIME      T= F   P=psig
------------------------
C 12:17:05P 104.2    0.1P
C 12:18:06P 213.1    9.9P
S 12:22:45P 250.0   19.7P
S 12:23:45P 252.0   20.4P
S 12:24:45P 252.5   19.8P
S 12:25:45P 252.1   19.2P
S 12:26:45P 252.4   19.1P
S 12:27:45P 252.2   19.0P
S 12:28:45P 252.3   18.8P
S 12:29:45P 252.1   18.6P
S 12:30:45P 252.1   18.8P
S 12:31:45P 252.2   18.7P
S 12:32:45P 252.4   18.6P
S 12:33:46P 252.1   18.4P
S 12:34:45P 252.0   18.2P
S 12:35:46P 252.1   18.5P
S 12:36:46P 252.4   18.5P
S 12:37:46P 252.3   18.2P
S 12:38:46P 252.3   17.9P
S 12:39:46P 252.1   17.8P
S 12:40:46P 252.1   17.9P
S 12:41:46P 252.5   18.1P
S 12:42:46P 252.4   17.9P
S 12:43:46P 252.4   17.7P
S 12:44:46P 252.2   17.6P
S 12:45:46P 252.0   17.6P
S 12:46:46P 252.0   17.7P
S 12:47:46P 252.2   17.7P
S 12:48:46P 252.5   17.7P
S 12:49:46P 252.4   17.5P
S 12:50:46P 252.3   17.4P
S 12:51:46P 252.2   17.2P
E 12:52:45P 252.1   17.2P
E 12:53:16P 219.4    3.7P
E  1:08:16P 145.7   27.8V
Z  1:09:33P 128.6    1.9V

LOAD              031504

  TEMP MAX=252.8F
  TEMP MIN=250.1F

CONDITION   = 5:40
STERILIZE   =30:00
EXHAUST     =16:48
TOTAL CYCLE =52:28
```

Figure 5-5. Typical Printout of a Gravity Cycle

5.12 Prevac Cycle 275°F (135°C)

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING – SLIPPING HAZARD: To prevent falls, keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

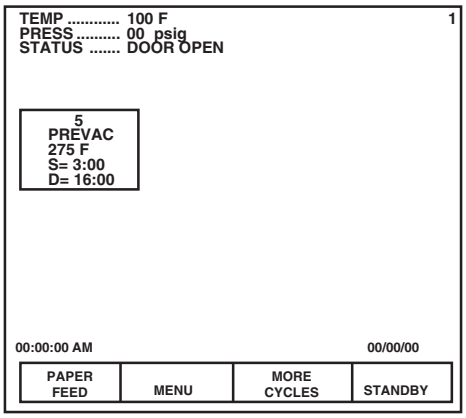
WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

The 275°F (135°C) cycle is used for sterilizing double-wrapped instrument trays.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. Press MORE CYLES touch screen pad, then press PREVAC touch-screen pad to start the 275° F (135°C) Prevacuum cycle. Refer to **Table 5-2** for descriptions of cycle use.
4. Sterilizer automatically progresses through cycle, as follows:

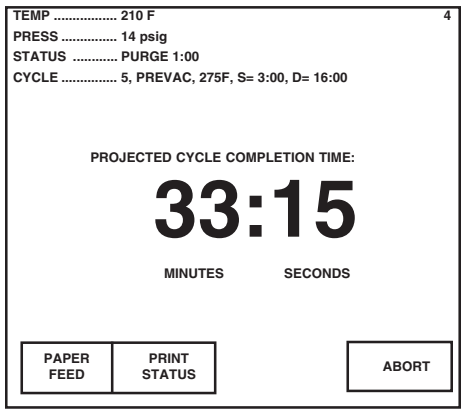
   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES in this section.

ACTIVATE SEAL – Steam enters the door seal, pressing it against inside surface of the door.



PURGE – Chamber is purged with steam. Start of Condition is printed.

NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.

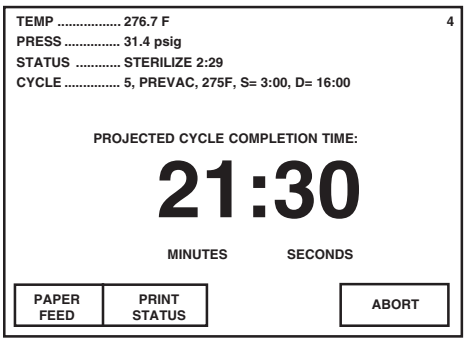


PRESSURE/VACUUM PULSES #1 – #3 – Vacuum point is printed and pressure/vacuum pulse is repeated.

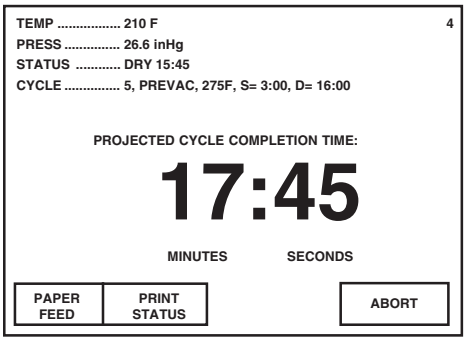
CHARGE – Chamber is charged with steam. Start of steam charge is printed.

STERILIZE – Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every minute.

FAST EXHAUST — Start of exhaust is printed and chamber is exhausted to 4 psig.

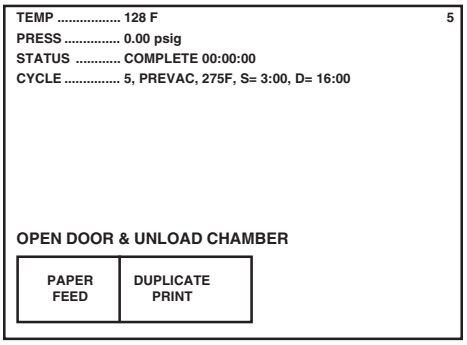


DRY — Start of dry is printed and display counts down dry time remaining.



AIR BREAK — Chamber is returned to atmospheric pressure.

RETRACT SEAL — A vacuum is drawn on the seal, retracting it from inner surface of door.



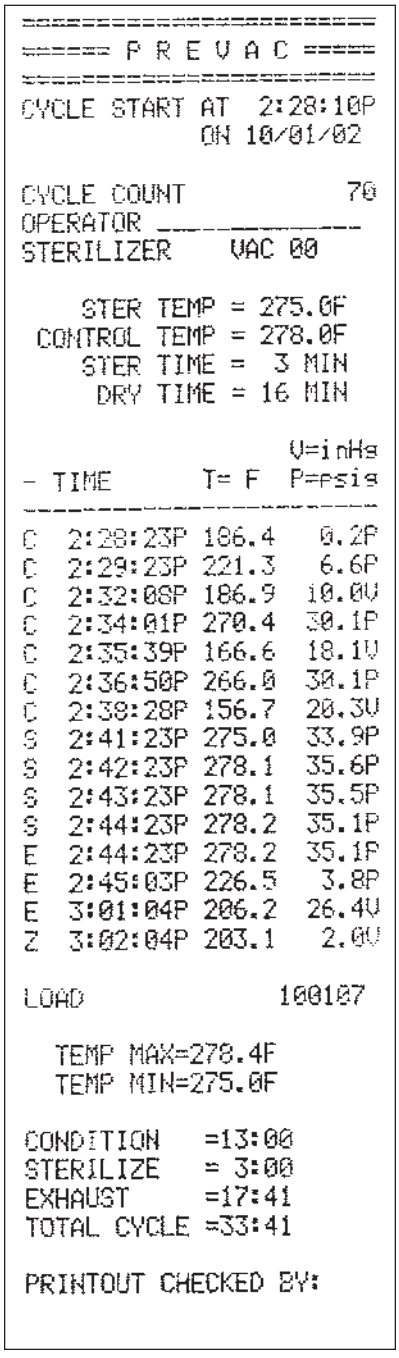
COMPLETE — Complete tone sounds. Cycle summary and end of cycle messages are printed.

5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section for procedures to remove load).

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING–BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.



```
==========================
====== P R E V A C ======
==========================
CYCLE START AT  2:28:10P
             ON 10/01/02

CYCLE COUNT             70
OPERATOR _____________
STERILIZER    VAC 00

    STER TEMP = 275.0F
 CONTROL TEMP = 278.0F
    STER TIME =  3 MIN
     DRY TIME = 16 MIN

                      V=inHg
- TIME       T= F   P=psig
-------------------------
C  2:28:23P 186.4    0.2P
C  2:29:23P 221.3    6.6P
C  2:32:08P 186.9   10.0V
C  2:34:01P 270.4   30.1P
C  2:35:39P 166.6   18.1V
C  2:36:50P 266.0   30.1P
C  2:38:28P 156.7   20.3V
S  2:41:23P 275.0   33.9P
S  2:42:23P 278.1   35.6P
S  2:43:23P 278.1   35.5P
S  2:44:23P 278.2   35.1P
E  2:44:23P 278.2   35.1P
E  2:45:03P 226.5    3.8P
E  3:01:04P 206.2   26.4V
Z  3:02:04P 203.1    2.0V

LOAD              100107

  TEMP MAX=278.4F
  TEMP MIN=275.0F

CONDITION   =13:00
STERILIZE   = 3:00
EXHAUST     =17:41
TOTAL CYCLE =33:41

PRINTOUT CHECKED BY:
```

Figure 5-6. Typical Printout of a 275°F Prevac Cycle

5.13 Liquid Cycle

⚠ WARNING – EXPLOSION HAZARD: This sterilizer is not designed to process flammable compounds.

⚠ WARNING – PERSONAL INJURY HAZARD: Avoid personal injury from bursting bottles. Liquid sterilization cycle must only be used for liquids in borosilicate (Pyrex) flasks with vented closures.

⚠ WARNING: It is inappropriate for a healthcare facility to sterilize liquids for direct patient contact.

⚠ WARNING – BURN HAZARD: When sterilizing liquids, you must observe the following procedures:

- **Use Liquid cycle only.**
- **Use only vented closures.**
- **Use only Type I borosilicate glass bottles.**
- **Do not allow hot bottles to be jolted.**

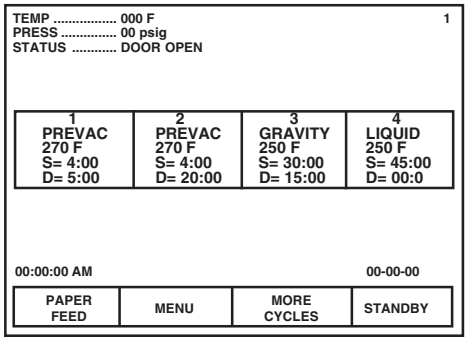
⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ CAUTION: Sterilization of chloride-containing solutions (e.g., saline) can cause chamber corrosion and is not recommended by the manufacturer. If, however, chloride-containing solutions must be processed, clean the chamber after each use.

This cycle is used for sterilizing liquids in vented closures.

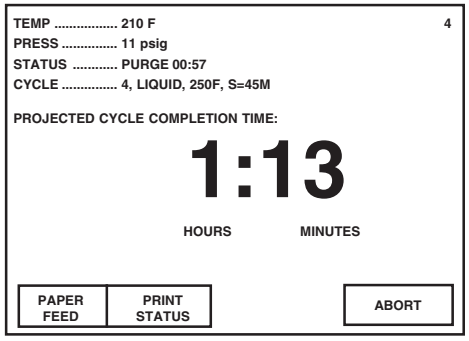
1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. Press LIQUID touch-screen pad to start the Liquid cycle.
4. Sterilizer automatically progresses through cycle, as follows:

   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES in this section.



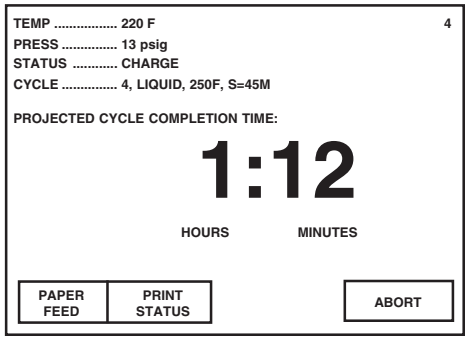
ACTIVATE SEAL – Steam enters the door seal, pressing it against inside surface of the door.

PURGE – Chamber is purged with steam. Start of condition is printed.

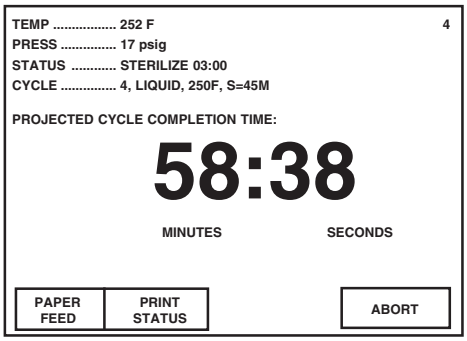


NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.

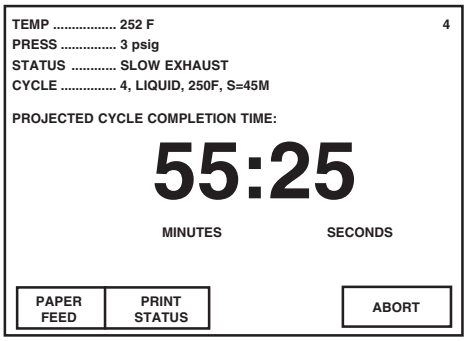
CHARGE – Chamber is charged with steam. Start of steam charge is printed.



STERILIZE – Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every 5 minutes.



SLOW EXHAUST – Start of exhaust is printed and chamber is exhausted to 0 psig.



WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

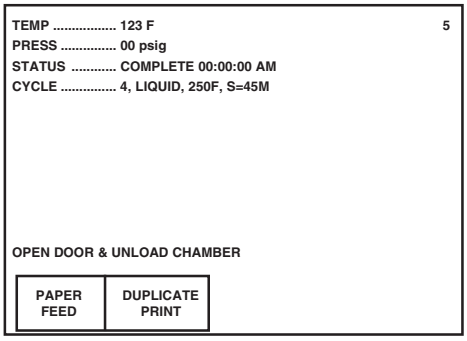
WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

SLOW EVACUATE – A vacuum is slowly drawn in the chamber to 5.0 inHg. This phase assures that the chamber is cooled to 208°F/95°C.

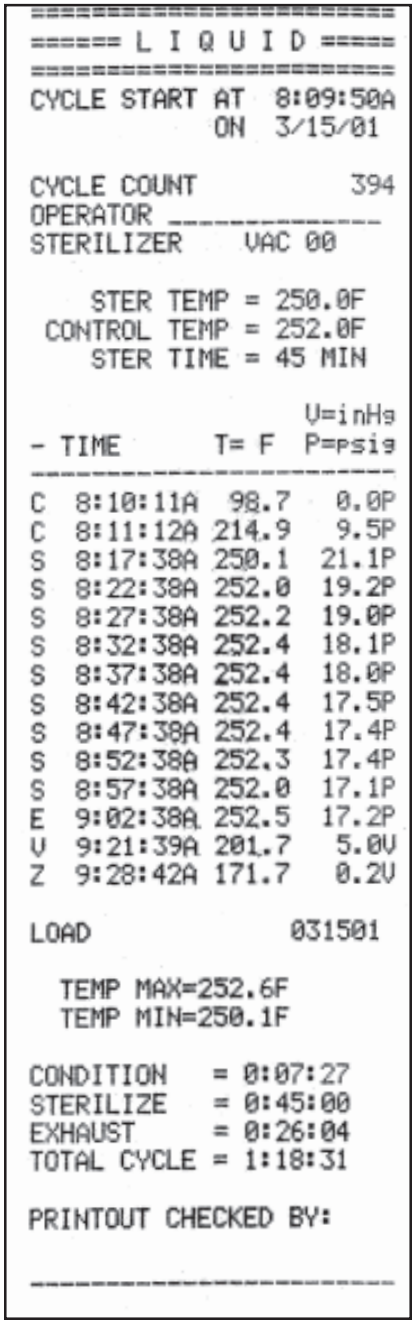
VAPOR REMOVAL – Filtered air enters the chamber to relieve the vacuum within the chamber.

RETRACT SEAL – Steam is exhausted from the door seal. For hinged door models, the door must be unlocked and opened slightly at this time, horizontal-sliding door models open automatically. (Chamber vapor vents through slight opening between seal and door, into the sterilizer cabinet for 6 minutes.)

COMPLETE – Complete tone sounds. Cycle summary and end of cycle messages are printed.



5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section for procedures to remove load).



```
========================
====== L I Q U I D =====
========================
CYCLE START AT  8:09:50A
            ON  3/15/01

CYCLE COUNT          394
OPERATOR _____________
STERILIZER    VAC 00

    STER TEMP = 250.0F
 CONTROL TEMP = 252.0F
    STER TIME = 45 MIN

                    V=inHg
- TIME      T= F  P=psig
------------------------
C  8:10:11A  98.7   0.0P
C  8:11:12A 214.9   9.5P
S  8:17:38A 250.1  21.1P
S  8:22:38A 252.0  19.2P
S  8:27:38A 252.2  19.0P
S  8:32:38A 252.4  18.1P
S  8:37:38A 252.4  18.0P
S  8:42:38A 252.4  17.5P
S  8:47:38A 252.4  17.4P
S  8:52:38A 252.3  17.4P
S  8:57:38A 252.0  17.1P
E  9:02:38A 252.5  17.2P
V  9:21:39A 201.7   5.0V
Z  9:28:42A 171.7   0.2V

LOAD              031501

  TEMP MAX=252.6F
  TEMP MIN=250.1F

CONDITION   = 0:07:27
STERILIZE   = 0:45:00
EXHAUST     = 0:26:04
TOTAL CYCLE = 1:18:31

PRINTOUT CHECKED BY:

_____________________
```

Figure 5-7. Typical Printout of a Liquid Cycle

5.14 SFPP Sterilizer Cycles

Amsco Century Medium SFPP Steam Sterilizers are shipped with the factory-set cycles. The cycle sequence for these cycles is given in section 5.14. Refer below, and to Tables 5-1A and 5-1B for factory-set, qualified cycle settings.

NOTE: The 270°F Prevacuum cycle described in SECTION 5.10, the 250°F Gravity cycle described in SECTION 5.11, and the 275°F Prevacuum cycle described in SECTION 5.12 are common to both SFPP and Prevacuum configuration sterilizers.

Important: The sterilization cycles listed in **Table 5-1B** have been validated using techniques documented in AAMI ST-8. If different cycle parameters (sterilize time and dry time only) other than those in **Tables 5-1A** and **5-1B** are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI guidelines/standards for a guide to validating sterilization cycles and to ensure that proper sterility assurance level (SAL) as well as moisture retention acceptance criteria are met.

NOTE: Contact your customer service representative for information on a wide range of education/training programs designed to meet the educational needs of healthcare industries.

Steam Flush Pressure-Pulse Sterilizer Cycles and Cycle Values (Table 5-1B)

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. WRAP/ SFPP	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Non-porous Goods, only. *Refer to **Table 5-2** for recommended quantities.*	ST-8
2. SFPP	270°F (132°C)	4 MIN.	20 MIN.	Fabric Packs *Refer to **Table 5-2** for recommended quantities.*	ST-8
3. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Fabric Packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
4. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 5-2** for recommended quantities.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 5-2** for recommended quantities.*	ST-8

5.14.1 270°F Wrap/ SFPP Cycle

WARNING–BURN HAZARD: Sterilizer, rack/ shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING–BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

WARNING–SLIPPING HAZARD: To prevent falls keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

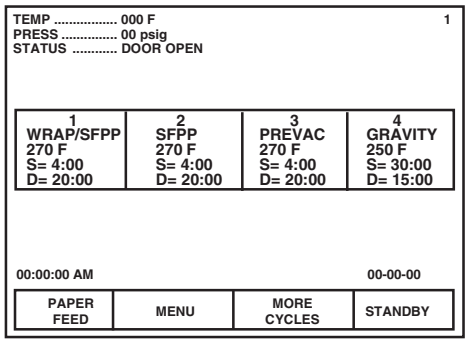
The Wrap/SFPP cycle is designed to permit sterilization of double-wrapped instrument trays (maximum weight of 17 lbs [7.7 kg] each) of non-porous goods only. This cycle conditions loads at above-atmospheric pressure. The Wrap/SFPP cycle consists of two steam flush pressure pulses with a Sterilization time of 4 minutes at 270°F and a 20-minute Dry time.

NOTE: Make sure items are clean and free of soil.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. Press the **WRAP/SFPP** touch-screen pad to start the WRAP/SFPP cycle. Refer to Table 5-1 for descriptions of cycle use.
4. Sterilizer automatically progresses through cycle, as follows:

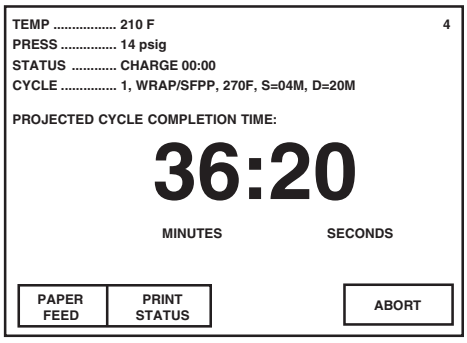
   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES at the end of this section.

ACTIVATE SEAL – Steam enters the door seal, pressing it against inside surface of door.



PURGE – Chamber is purged with steam. Start of condition is printed.

NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.

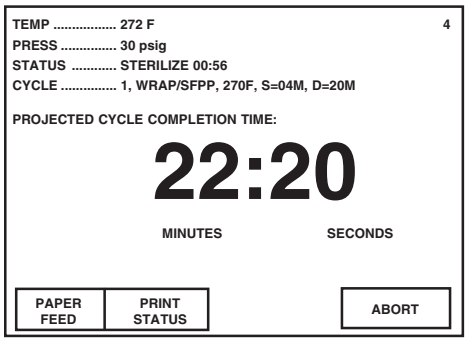


STEAM FLUSH –

PULSE #1 (and **PULSE #2**) – Pressure point is printed and pressure pulse is repeated.

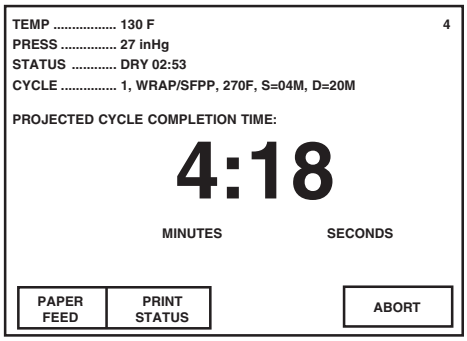
CHARGE — Chamber is charged with steam. Start of steam charge is printed.

STERILIZE — Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every minute.



FAST EXHAUST — Start of exhaust is printed and chamber is exhausted to 4 psig.

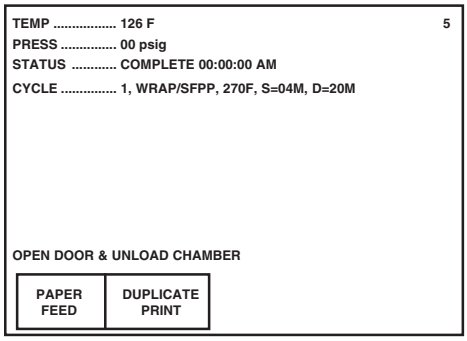
DRY — Start of dry is printed and display counts down dry time remaining.



AIR BREAK — Chamber is returned to atmospheric pressure.

RETRACT SEAL — A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE — Complete tone sounds. Cycle summary and end of cycle messages are printed.

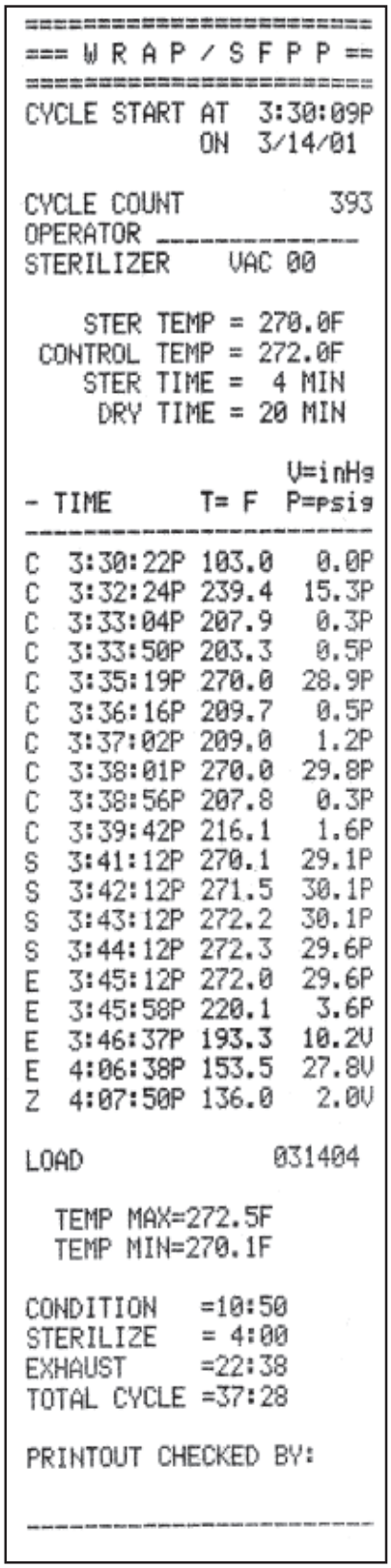


5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to remove load).

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.



```
========================
=== W R A P / S F P P ==
========================
CYCLE START AT  3:30:09P
            ON  3/14/01

CYCLE COUNT          393
OPERATOR _____________
STERILIZER    VAC 00

    STER TEMP = 270.0F
 CONTROL TEMP = 272.0F
    STER TIME =  4 MIN
     DRY TIME = 20 MIN

                     V=inHg
- TIME      T= F  P=psig
------------------------
C  3:30:22P 103.0   0.0P
C  3:32:24P 239.4  15.3P
C  3:33:04P 207.9   0.3P
C  3:33:50P 203.3   0.5P
C  3:35:19P 270.0  28.9P
C  3:36:16P 209.7   0.5P
C  3:37:02P 209.0   1.2P
C  3:38:01P 270.0  29.8P
C  3:38:56P 207.8   0.3P
C  3:39:42P 216.1   1.6P
S  3:41:12P 270.1  29.1P
S  3:42:12P 271.5  30.1P
S  3:43:12P 272.2  30.1P
S  3:44:12P 272.3  29.6P
E  3:45:12P 272.0  29.6P
E  3:45:58P 220.1   3.6P
E  3:46:37P 193.3  10.2V
E  4:06:38P 153.5  27.8V
Z  4:07:50P 136.0   2.0V

LOAD              031404

  TEMP MAX=272.5F
  TEMP MIN=270.1F

CONDITION   =10:50
STERILIZE   = 4:00
EXHAUST     =22:38
TOTAL CYCLE =37:28

PRINTOUT CHECKED BY:

_____________________
```

Figure 5-8. Typical Printout — 270°F Wrap/SFPP Cycle

5.14.2 SFPP Cycle, 270°F

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

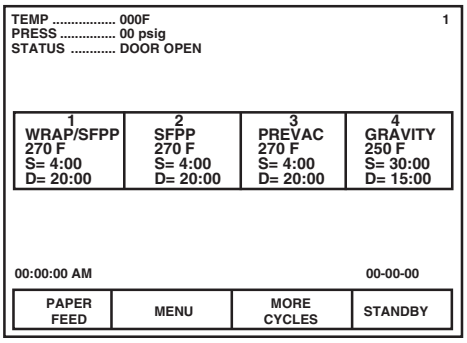
WARNING – SLIPPING HAZARD: To prevent falls keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading or unloading area.

WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.

The SFPP cycle is designed for sterilizing fabric packs. The cycle conditions loads at above-atmospheric pressure. The SFPP cycle features three steam flush pressure pulses, a sterilization time of 4 minutes at 270°F and a 20-minute dry time.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section) before running this cycle.
2. See instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to load the sterilizer.
3. Press the SFPP touch-screen pad to start the SFPP cycle. Refer to **Table 5-1** for descriptions of cycle use.
4. Sterilizer automatically progresses through cycle, as follows:

   NOTE: If the wrong cycle has been selected, see SECTION 5.16, ABORTING CYCLES at the end of this section.



ACTIVATE SEAL — Steam enters the door seal, pressing it against inside surface of door.

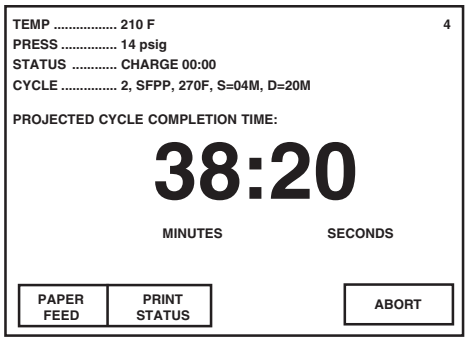
PURGE — Chamber is purged with steam. Start of condition is printed.

NOTE: Countdown timer on the display is estimated; timer self-corrects estimated time at the beginning of each phase.

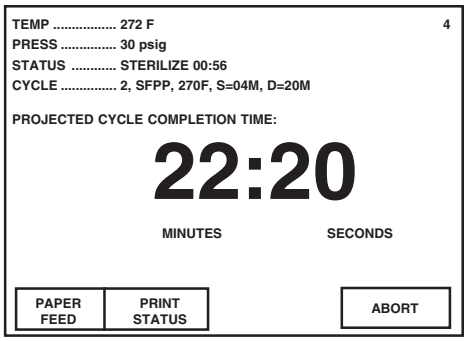
STEAM FLUSH

PULSE #1 through **PULSE #3** — Pressure point is printed and pressure pulse is repeated.

CHARGE — Chamber is charged with steam. Start of steam charge is printed.

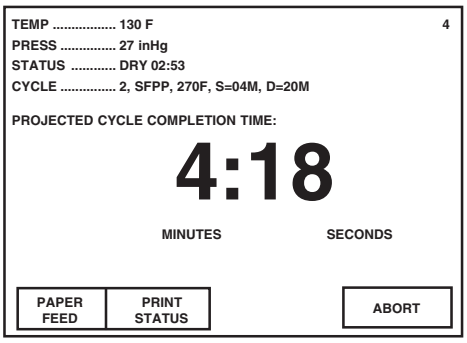


STERILIZE— Start of sterilize exposure is printed when the chamber reaches sterilization temperature. Chamber temperature is printed every minute.



FAST EXHAUST— Start of exhaust is printed and chamber is exhausted to 4 psig.

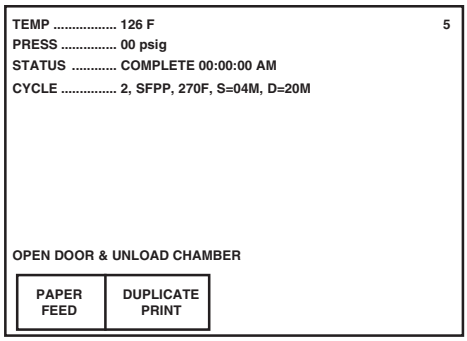
DRY— Start of dry is printed and display counts down dry time remaining.



AIR BREAK— Chamber is returned to atmospheric pressure.

RETRACT SEAL— A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE — Complete tone sounds. Cycle summary and end of cycle messages are printed.

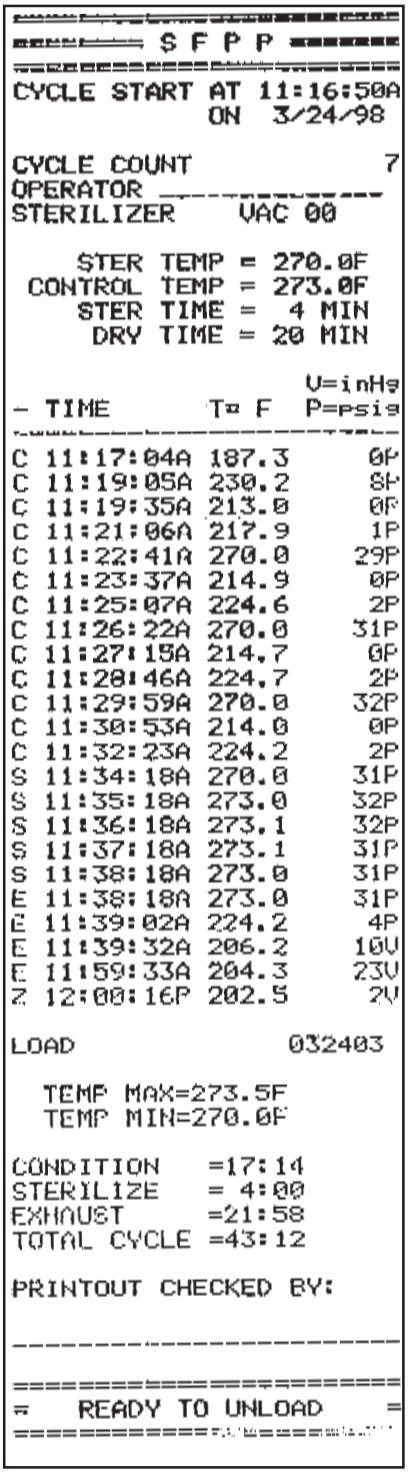


5. Unload sterilizer (see instructions for using the loading car/transfer carriage or rack and shelves, earlier in this section, for procedures to remove load).

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

⚠ WARNING – PERSONAL INJURY HAZARD: When closing the chamber door, keep hands and arms out of the door opening and make sure opening is clear of obstructions.



```
          S F P P

CYCLE START AT 11:16:50A
            ON  3/24/98

CYCLE COUNT              7
OPERATOR _____________
STERILIZER     VAC 00

     STER TEMP = 270.0F
  CONTROL TEMP = 273.0F
     STER TIME =  4 MIN
      DRY TIME = 20 MIN

                          V=inHg
- TIME        T= F   P=psig
C 11:17:04A 187.3      0P
C 11:19:05A 230.2      8P
C 11:19:35A 213.0      0P
C 11:21:06A 217.9      1P
C 11:22:41A 270.0     29P
C 11:23:37A 214.9      0P
C 11:25:07A 224.6      2P
C 11:26:22A 270.0     31P
C 11:27:15A 214.7      0P
C 11:28:46A 224.7      2P
C 11:29:59A 270.0     32P
C 11:30:53A 214.0      0P
C 11:32:23A 224.2      2P
S 11:34:18A 270.0     31P
S 11:35:18A 273.0     32P
S 11:36:18A 273.1     32P
S 11:37:18A 273.1     31P
S 11:38:18A 273.0     31P
E 11:38:18A 273.0     31P
E 11:39:02A 224.2      4P
E 11:39:32A 206.2     10V
E 11:59:33A 204.3     23V
Z 12:00:16P 202.5      2V

LOAD                032403

  TEMP MAX=273.5F
  TEMP MIN=270.0F

CONDITION    =17:14
STERILIZE    = 4:00
EXHAUST      =21:58
TOTAL CYCLE  =43:12

PRINTOUT CHECKED BY:

_____________________

=======================
=   READY TO UNLOAD    =
=======================
```

Figure 5-9. Typical Printout — 270°F SFPP Cycle

5.15 Test Cycles

5.15.1 DART (Bowie-Dick) Test

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

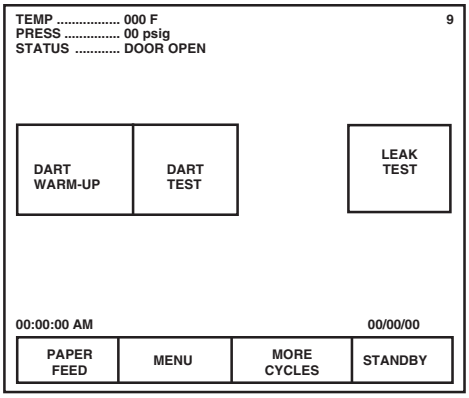
⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

Test cycles are factory programmed on both the Prevacuum and SFPP Sterilizers. These cycles are used to verify the sterilizer is functioning at optimum capability.

This cycle is used to conduct a Bowie-Dick test on sterilizers that use prevacuum cycles. This test is only applicable to sterilizers that use prevacuum cycles.

The DART test is designed to document the removal of residual air from a sample challenge load (see *SECTION 3.2.2, TESTING FOR PREVACUUM EFFICIENCY*). Refer to *SECTION 3, TECHNIQUES OF STERILIZATION,* when constructing the DART test pack. AAMI ST-46 requires that a DART test cycle be run as the first cycle of the day each day the sterilizer is in use. The chamber must be at operating temperature when the DART test cycle is performed. The DART Warm-up cycle should be completed prior to performing the DART test cycle.

1. Refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* earlier in this section, and to *SECTION 3, TECHNIQUES OF STERILIZATION*, to prepare the unit for running this cycle.
2. Press MORE CYCLES touch-screen pad at the cycle selection menu to access the second screen of cycles. Press DART touch-screen pad.
3. A second menu then appears on the screen. A DART test should only be run in a machine that is at operating temperature (that is, has run one or more cycles). If the sterilizer has not run any cycles prior to the DART test, run the DART WARM-UP cycle.
   a. The operator is prompted to close the chamber door, if it is open. Once closed, the door seals automatically.



   b. During "warm up," the sterilizer automatically runs a cycle with 3- minute sterilize and 1-minute dry values.
   c. Once the Warm-up cycle is complete, the display returns to cycle select menu.
4. Open the chamber door (if it is not already open). Load the DART (Bowie-Dick) test pack and close the door.
5. Start the DART cycle. The cycle runs automatically, as follows:

ACTIVATE SEAL — Steam enters the door seal, pressing seal against inside surface of door.

PURGE— Chamber is purged with steam. Start of condition is printed.

PULSES #1 through **PULSE #4**— Vacuum point is printed and pressure/vacuum pulse is repeated.

CHARGE— Chamber is charged with steam. Start of steam charge is printed.

STERILIZE— Start of sterilize exposure is printed when the chamber reaches set temperature. Chamber temperature is printed every minute. Chamber is controlled at set point plus overdrive.

FAST EXHAUST— Start of exhaust is printed and chamber is exhausted to 4 psig (0.28 Pbar).

DRY— Start of dry is printed and display counts down dry time remaining.

AIR BREAK— Chamber is returned to atmospheric pressure.

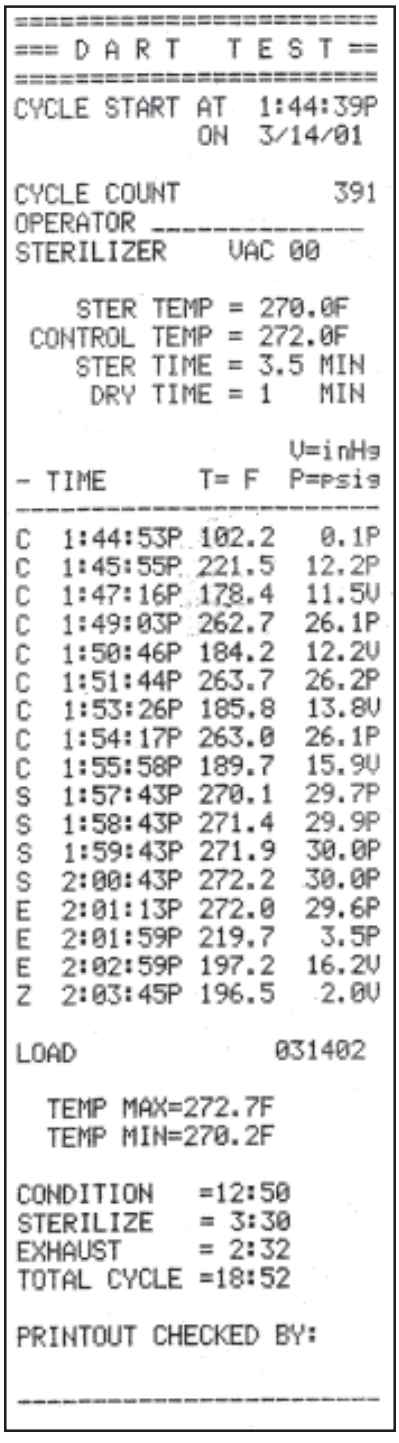
RETRACT SEAL— A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE— Complete tone sounds. Cycle summary and end of cycle messages are printed.

6. Once the cycle is complete:
   a. Open the chamber door.
   b. Unload the DART test pack.
   c. Forward the exposed DART indicator to the appropriate personnel for examination.

⚠ WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

⚠ WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.



```
========================
=== D A R T   T E S T ==
========================
CYCLE START AT  1:44:39P
            ON  3/14/01

CYCLE COUNT          391
OPERATOR _____________
STERILIZER    VAC 00

    STER TEMP = 270.0F
 CONTROL TEMP = 272.0F
    STER TIME = 3.5 MIN
     DRY TIME = 1   MIN

                     V=inHg
- TIME      T= F   P=psig
------------------------
C  1:44:53P 102.2   0.1P
C  1:45:55P 221.5  12.2P
C  1:47:16P 178.4  11.5V
C  1:49:03P 262.7  26.1P
C  1:50:46P 184.2  12.2V
C  1:51:44P 263.7  26.2P
C  1:53:26P 185.8  13.8V
C  1:54:17P 263.0  26.1P
C  1:55:58P 189.7  15.9V
S  1:57:43P 270.1  29.7P
S  1:58:43P 271.4  29.9P
S  1:59:43P 271.9  30.0P
S  2:00:43P 272.2  30.0P
E  2:01:13P 272.0  29.6P
E  2:01:59P 219.7   3.5P
E  2:02:59P 197.2  16.2V
Z  2:03:45P 196.5   2.0V

LOAD              031402

  TEMP MAX=272.7F
  TEMP MIN=270.2F

CONDITION   =12:50
STERILIZE   = 3:30
EXHAUST     = 2:32
TOTAL CYCLE =18:52

PRINTOUT CHECKED BY:

_____________________
```

Figure 5-10. Typical Printout of a Dart Cycle

5.15.2 Vacuum Leak Test

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – STERILITY ASSURANCE HAZARD: According to AAMI standards, a measured leak rate greater than 1 mm Hg/minute (1.3 mbar/min) indicates a problem with the sterilizer. Refer the situation to a qualified service technician before using the sterilizer further.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

This cycle is used for testing vacuum integrity of the sterilizer and piping.

A Vacuum Leak Test cycle should be run on the sterilizer at least once each week. It should be one of the first cycles run for the day, but not the first cycle. In this cycle, the sterilizer automatically checks for vacuum leaks in the piping and door seal. If the sterilizer fails the leak test, it must be inspected by a qualified service technician. (This test is not a substitute for a Bowie-Dick test.) The Leak Test can also be used to confirm that the sterilizer piping is intact after performing repairs.

NOTE: The measured leak rate (mm Hg per minute) is calculated by the control over a timed 10-minute period and is included in the cycle printout. A leak rate of 1 mm Hg/minute or less is considered acceptable.

1. Before running Leak Test cycle, refer to *SECTION 5.1, BEFORE OPERATING THE STERILIZER* (at the beginning of this section).

   NOTE: The sterilizer should be warm before running this test cycle. If no other cycle has been run on the sterilizer before the Leak Test, run a DART Warm Up cycle.

2. Press MORE CYCLES. The Leak Test cycle touch-screen pad appears on display.

3. To start the Leak Test, press the LEAK TEST touch-screen pad. Printer records cycle start. Cycle runs automatically as follows:

NOTE: Cycle requires 30-35 minutes to complete.

ACTIVATE SEAL — Steam enters the door seal, pressing seal against inside surface of door.

PURGE— Chamber is purged; printer records end of purge.

PULSE #1 (and **PULSE #2**) — Two vacuum and pressure pulses then occur and printer records each.

CHARGE — After the pressure pulses, temperature rises to 270°F (132°C), unit begins to draw a vacuum for 10 minutes. (Printer records temperature and pressure at beginning of 10-minute vacuum time.)

LEAK TEST/EVACUATING — Printer records temperature and vacuum at end of evacuation time.

LEAK TEST/STABILIZING — 2-minute stabilization period begins after 10-minute evacuation is completed.

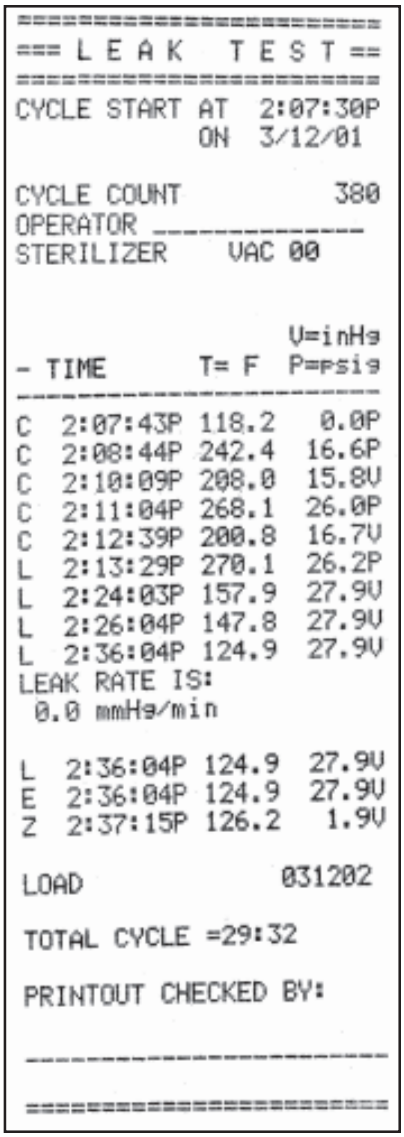
LEAK TEST — Ten minute Leak Test period begins after 2-minute stabilization is completed. Printer records calculated leak rate (mm Hg per minute) after 10-minute leak time.

AIR BREAK — Chamber is returned to atmospheric pressure, complete tone sounds and cycle summary and end of cycle messages are printed.

RETRACT SEAL — A vacuum is drawn on the seal, retracting it from inner surface of door.

COMPLETE — Complete tone sounds. Cycle summary and end of cycle messages are printed.

4. Once the sterilizer completes and passes the leak test, the unit can be used.



```
========================
=== L E A K   T E S T ==
========================
CYCLE START AT  2:07:30P
            ON  3/12/01

CYCLE COUNT           380
OPERATOR _____________
STERILIZER    VAC 00


                     V=inHg
- TIME       T= F   P=psig
-------------------------
C  2:07:43P 118.2    0.0P
C  2:08:44P 242.4   16.6P
C  2:10:09P 208.0   15.8V
C  2:11:04P 268.1   26.0P
C  2:12:39P 200.8   16.7V
L  2:13:29P 270.1   26.2P
L  2:24:03P 157.9   27.9V
L  2:26:04P 147.8   27.9V
L  2:36:04P 124.9   27.9V
LEAK RATE IS:
 0.0 mmHg/min

L  2:36:04P 124.9   27.9V
E  2:36:04P 124.9   27.9V
Z  2:37:15P 126.2    1.9V

LOAD              031202

TOTAL CYCLE =29:32

PRINTOUT CHECKED BY:

_________________________

=========================
```

Figure 5-11. Typical Printout of a Leak Test Cycle

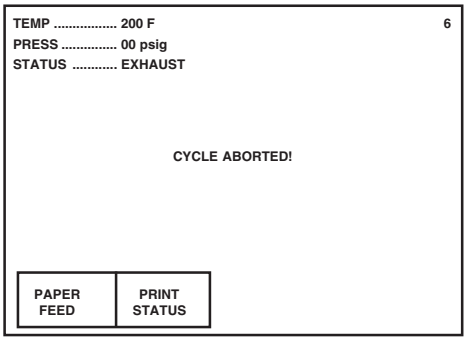
5.16 Aborting Cycles

WARNING – BURN HAZARD: Sterilizer, rack/shelves, and loading car will be hot after cycle is run. Always wear protective gloves and apron when removing a processed load. Protective gloves and apron must be worn when reloading sterilizer following the previous operation.

WARNING – BURN HAZARD: Steam may be released from the chamber when door is opened. Step back from the sterilizer each time the door is opened to minimize contact with steam vapor.

It may be necessary to end a processing cycle, possibly because the wrong cycle was selected or the sterilizer begins functioning incorrectly. A cycle can be aborted at any time by pressing the ABORT touch-screen pad.

1. Touch the ABORT touch-screen pad.
   - The status line on the display changes to EXHAUSTING CHAMBER, if there is pressure in the chamber.
   - The sterilizer exhausts the chamber of steam.



2. Once chamber reaches 4 psig (0.28 Pbar), the sterilizer removes vapor from the chamber for 1-minute.
3. Once vapor removal is over, status line changes to COMPLETE. When complete the sterilizer chamber can be unloaded following the instructions earlier in this section of the manual.

5.17 Cycle Graphs

These cycle graphs provide a visual representation of Century Medium Steam Sterilizer 26 x 37.5" cycles and their phases.

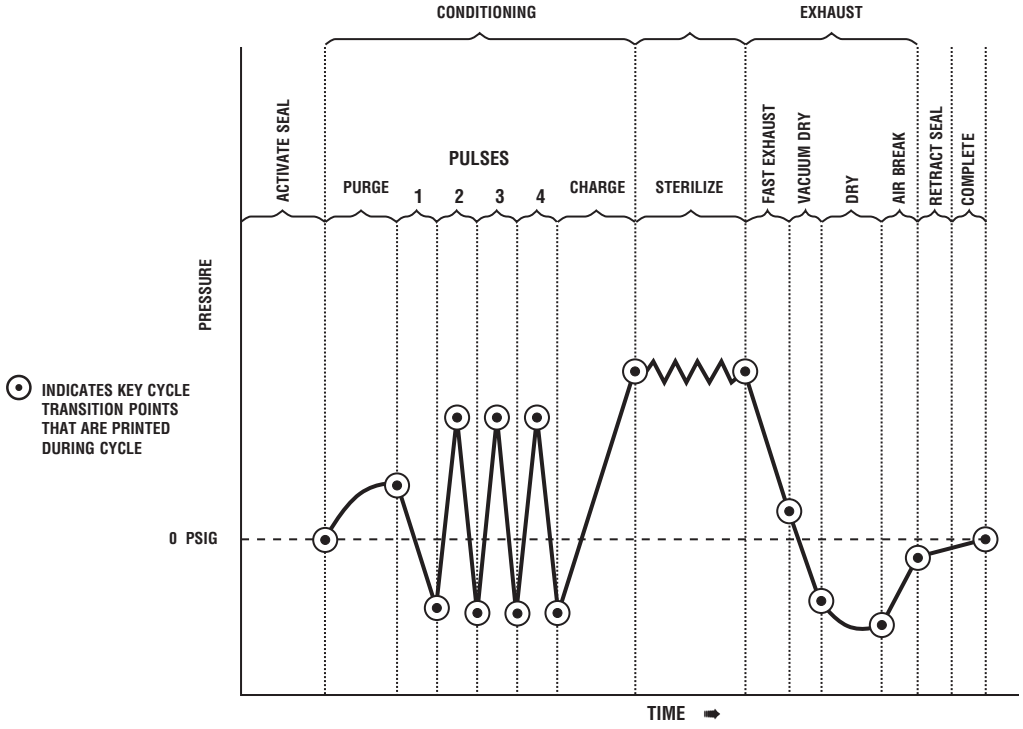


Figure 5-12. Cycle Graph - 270°F Prevacuum and Bowie-Dick Cycles

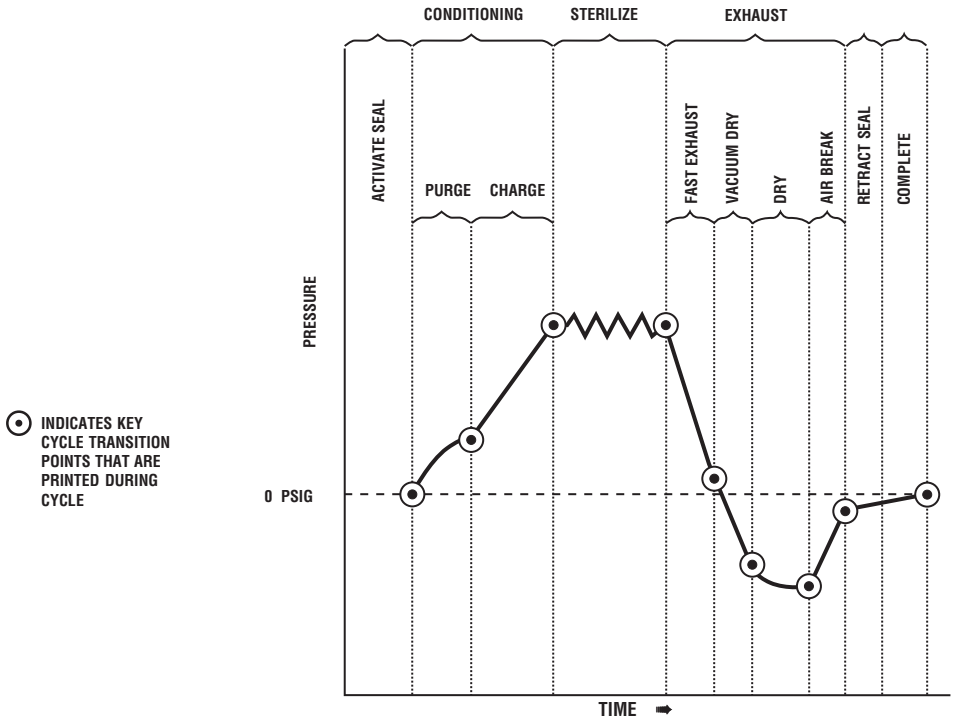


Figure 5-13. Cycle Graph - Gravity Cycle

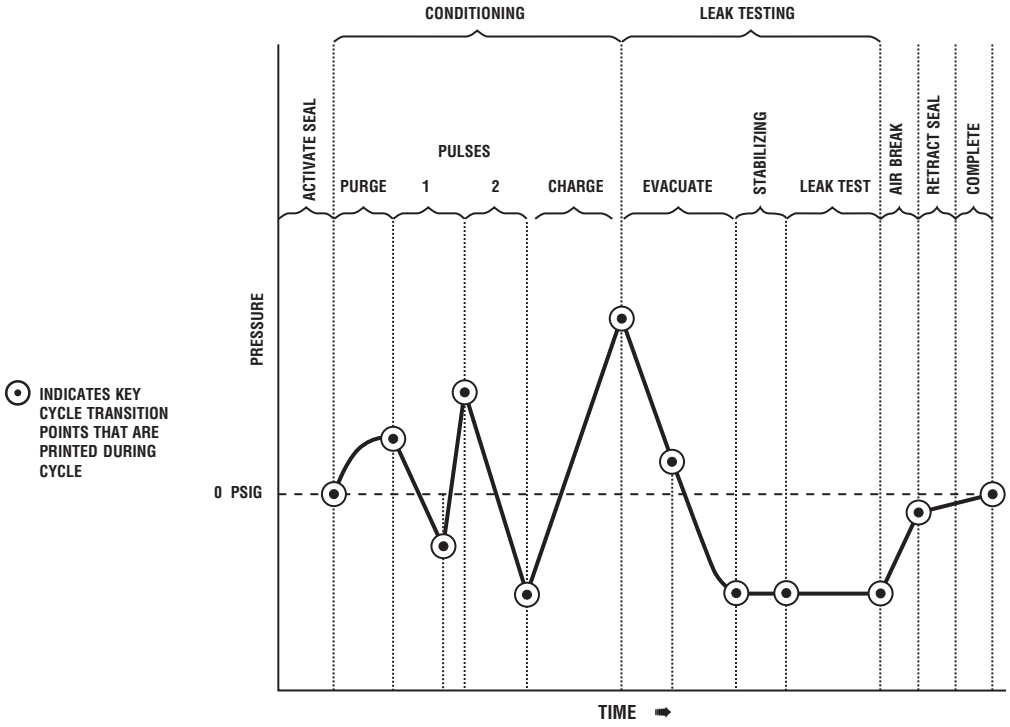
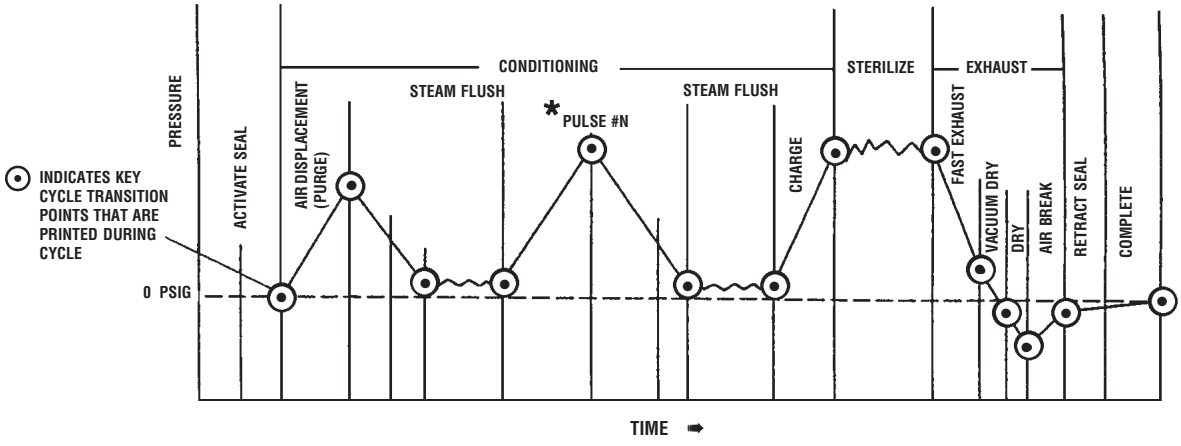


Figure 5-14. Cycle Graph - Leak Test



**NOTE: WRAP/SFPP cycle has two-pulse steam flushes; SFPP cycle has three-pulse steam flushes.*

Figure 5-15. Cycle Graph — Steam Flush Pressure Pulse WRAP/SFPP and SFPP Cycles

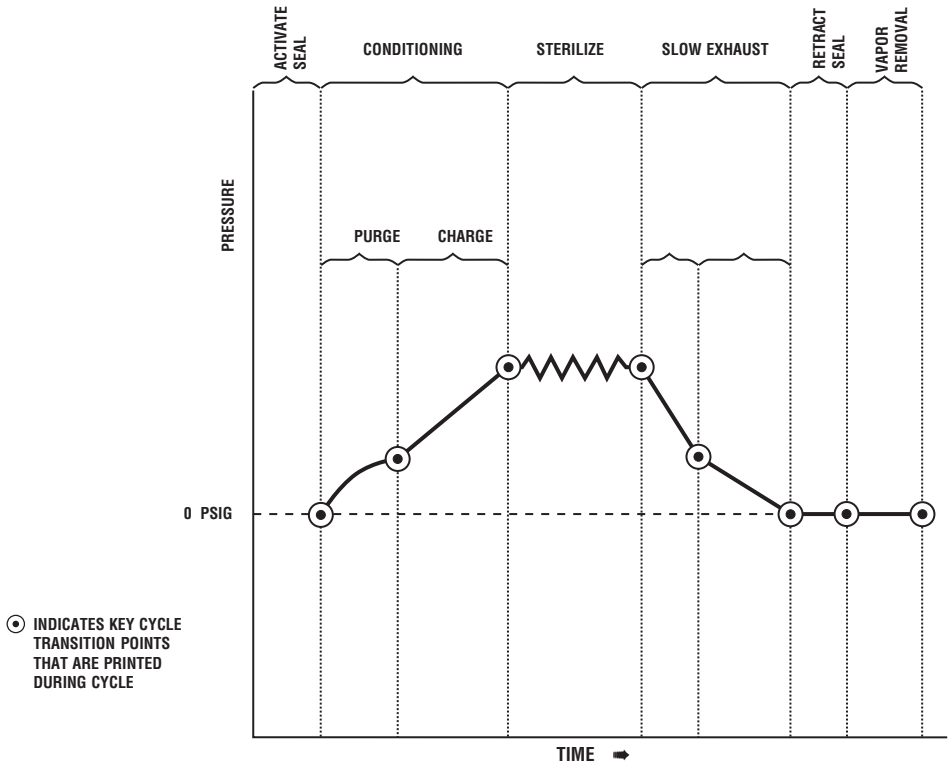


Figure 5-16. Cycle Graph - Liquid Cycle

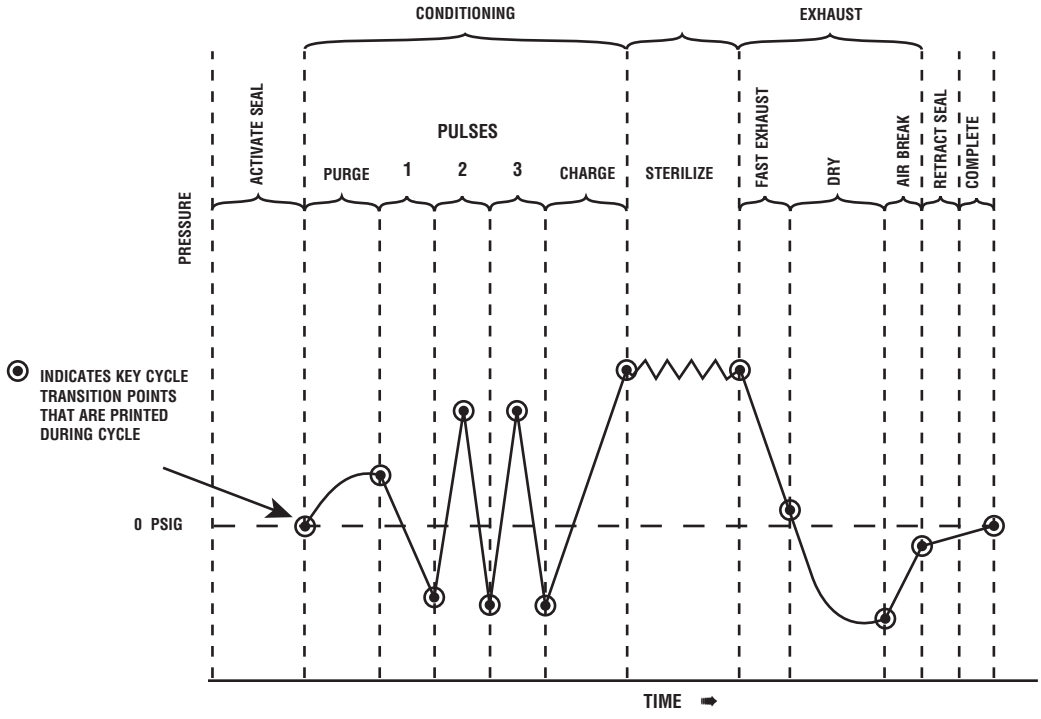


Figure 5-17. Cycle Graph - 275°F Prevacuum Cycle

CYCLE AND CONTROL VALUE PROGRAMMING 6

Amsco® Century™ Medium Steam Sterilizers 26 x 37.5 (660 x 950 mm) are shipped with factory-set cycles, cycle values and control values programmed into the control (see **Tables 6-1A** and **6-1B**). These are the cycles and values to which the control will default should a battery or battery-powered memory failure ever occur. These preset values can be changed to tailor the sterilizer to the operating environment in which it has been placed. To change these values, refer to the Change Values Procedures later in this section.

NOTE: If a battery/memory failure should occur, operator-set cycles and values would be lost. The factory-set cycles, cycle values and control values would then appear on the display when the sterilizer power is switched on.

Important: Applicable cycles have been validated to satisfy the requirements outlined in **Table 3-1**. If cycle parameters (sterilize time, dry time, temperature) other than those in **Tables 6-1A** or **6-1B** are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI for a guide to validating sterilization cycles and to ensure drying efficiencies are met.

6.1 Cycle Values

Amsco Century Medium Steam Sterilizers are shipped with the default cycle values shown in **Table 6-1** (following page).

NOTE: Although Century Medium Steam Sterilizers are factory-set to operate using Fahrenheit temperature units, the sterilizer can be reprogrammed to display and print using Celsius temperature units.

Table 6-1. Factory-Set Cycles and Cycle Values

The *Prevacuum configuration* Amsco Century Medium Steam Sterilizer is equipped with the following factory programmed sterilization cycles and cycle values (**Table 6-1A**).

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. PREVAC	270°F (132°C)	4 MIN.	5 MIN.	Single Fabric Pack	ST-8
2. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. Fabric packs. *Refer to **Table 6-2** for recommended quantities.*	ST-8
3. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 6-2** for recommended quantities.*	ST-8
4. LIQUID	250°F (121°C)	45 MIN.	0 MIN.	*Refer to **Table 6-3** for guidelines.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 6-2** for recommended quantities.*	ST-8

The *SFPP configuration* Amsco Century Medium *SFPP* Sterilizer is equipped with the following factory programmed sterilization cycles and cycle values (**Table 6-1B**).

Cycles:	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
1. WRAP/ SFPP	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Non-porous Goods, only. *Refer to **Table 6-2** for recommended quantities.*	ST-8
2. SFPP	270°F (132°C)	4 MIN.	20 MIN.	Fabric Packs *Refer to **Table 6-2** for recommended quantities.*	ST-8
3. PREVAC	270°F (132°C)	4 MIN.	20 MIN.	Double-wrapped instrument trays, max. wt.: 17lbs (7.7kg) each. Fabric Packs. *Refer to **Table 6-2** for recommended quantities.*	ST-8
4. GRAVITY	250°F (121°C)	30 MIN.	15 MIN.	Fabric packs. *Refer to **Table 6-2** for recommended quantities.*	ST-8
5. PREVAC	275°F (135°C)	3 MIN.	16 MIN.	Double-wrapped instrument trays, max. weight of 17 lbs (7.7 kg) each. *Refer to **Table 6-2** for recommended quantities.*	ST-8

Test Cycles for All Units	Sterilize Temp.	Sterilize Time	Dry Time	Recommended Load	Validation Standard
6. Leak Test[1]	270°F (132°C)	N/A	N/A	N/A	ST-8
7. DART Test[1]	270°F (132°C)	3-1/2 MIN.	1 MIN.	DARTor Bowie-Dick Test Pack	ST-8
8. DART Warm-up[1]	270°F (132°C)	3 MIN.	1 MIN.	N/A	N/A

[1] Not adjustable.

Table 6-2. Recommended Loads by Sterilizer Chamber Size [1]

Chamber Size	Wrapped Instrument Trays	Fabric Packs
26 x 37.5 x 36" (660 x 950 x 910)	9	18
26 x 37.5 x 48" (660 x 950 x 1220)	12	30
26 x 37.5 x 60" (660 x 950 x 1520)	15	36

*[1] Refer to **Tables 6-1A** and **6-1B** to determine cycle use guidelines.*

Table 6-3. Liquid Cycle Parameters

Number of Containers	Volume of Liquid in One Container	Minimum Recommended Sterilize Time at 250°F (121°C) in minutes
3	1000 mL	45

6.2 Change Values

IMPORTANT

Applicable cycles have been validated to satisfy the requirements outlined in **Table 3-1**. If cycle parameters (sterilize time or dry time) other than those in **Tables 6-1A** or **6-1B** are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI for a guide to validating sterilization cycles and to ensure drying efficiencies are met.

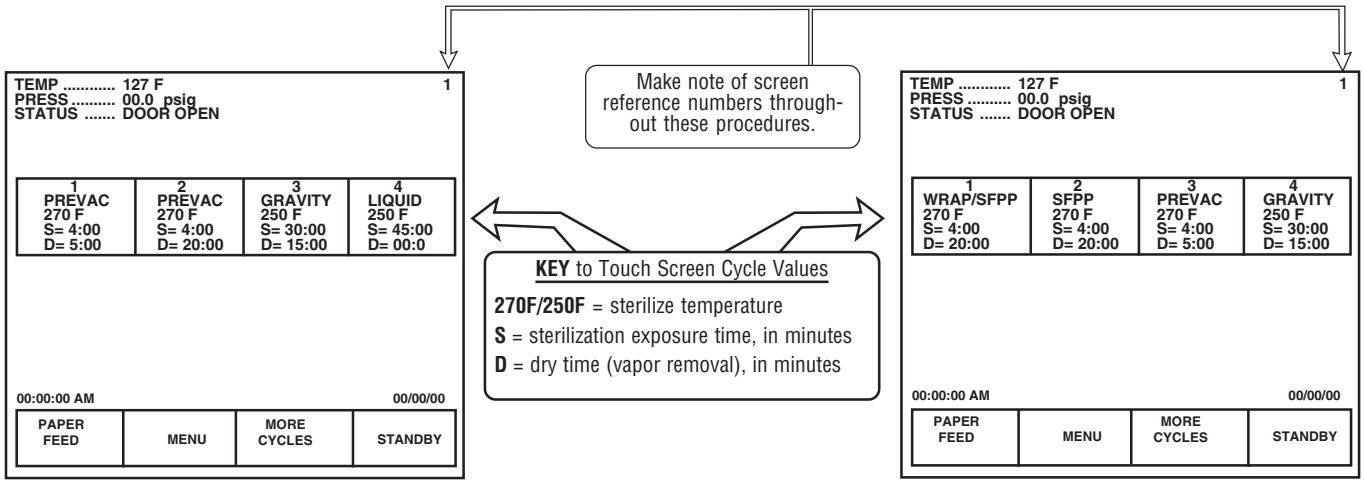
The Change Values procedure described in the following pages can be used to adjust cycle values within a limited range and to make selections affecting the operating style of the unit. Refer to **Table 6-1** for cycle values.

The Change Values Procedure can be used to adjust the following values:

- Sterilization Exposure Time (**Important:** This value is limited to a minimum value, refer to *SECTION 6.4, CHANGE TIME AND DATE*).
- Dry Time.
- Change Values can also be used to make adjustments to the Change Machine Setup values shown on **Table 6-4**.
- The default cycle values are shown on **Table 6-1**.

The Change Values touch screens are accessed by pressing the Change Values touch-screen pad (see Screen #2). All Change Values options can be secured (or locked out) using a supervisor's access code. It is recommended that supervisor's Access Code be used to prevent unauthorized personnel from changing cycle and system setup parameters.

NOTE: Although Century Medium Sterilizers are factory-set to operate using Fahrenheit temperature units, the sterilizer can be reprogrammed to display and print using Celsius temperature units.



Factory Set Cycles for Prevacuum Configuration

Factory Set Cycles for Steam Flush Pressure Pulse Configuration

6.3 Change Cycle Values

6.3.1 Overview

Refer to Figure 6-1. Press the ON touch screen pad, if the sterilizer is in STANDBY. The control advances to Status screen #1. At screen #1, press the MENU touch screen pad, and the control advances to screen #2; access the cycle values by pressing CHANGE CYCLE VALUES. Pressing CHANGE CYCLE VALUES advances the control to screen #10, prompting the operator to select a cycle to change. Press one of the displayed cycles, or MORE CYCLES to find a cycle not currently on the display. Once the cycle has been found and selected, the screen changes to show basic cycle information. Select the value to change: NAME (name of the cycle), STER (sterilize exposure time), or DRY (drying phase time). Press the touch screen pad; the display changes to a screen for making these changes. Once all selections have been made, press the EXIT touch screen pad.

6.3.2 Step by Step Flowchart

IMPORTANT

Applicable cycles have been validated to satisfy the requirements outlined in **Table 3-1**. If cycle parameters (sterilize time or dry time) other than those in **Tables 6-1A** or **6-1B** are required, it is the responsibility of the healthcare facility to validate the cycle. Reference AAMI standards for a guide to validating sterilization cycles and to ensure drying efficiencies are met.

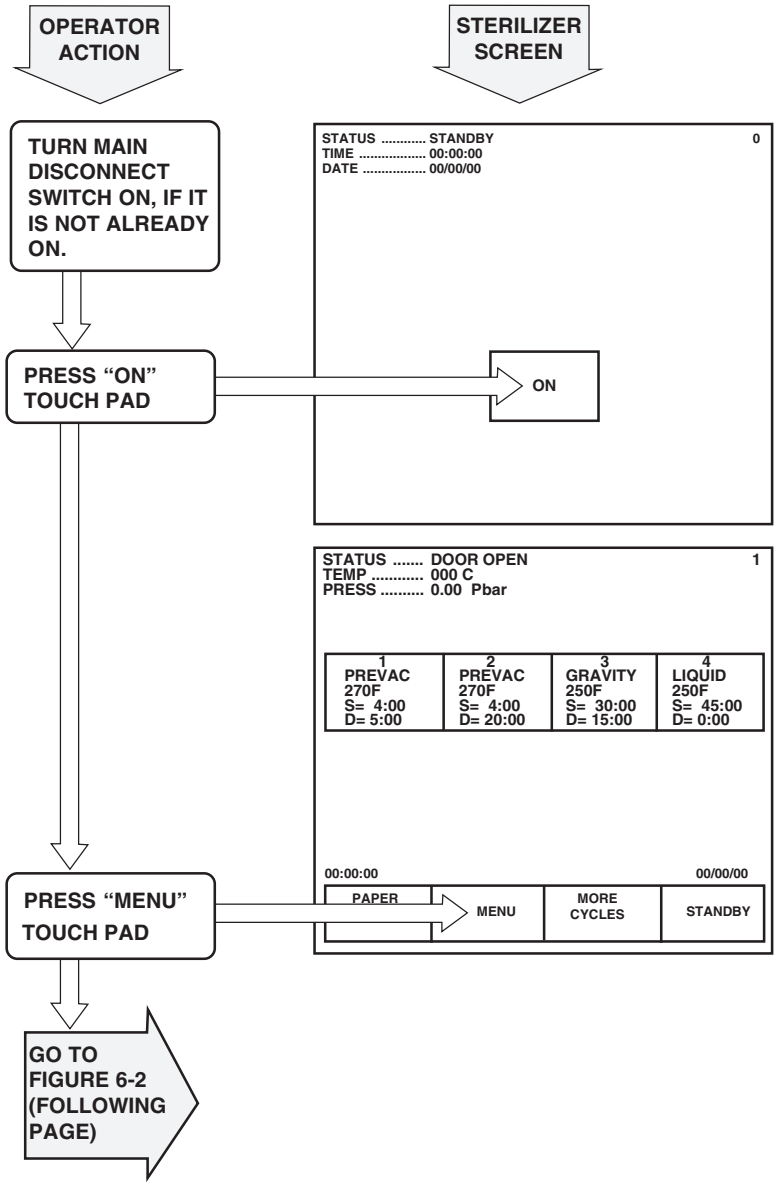


Figure 6-1. Accessing Change Cycle Values

Figure 6-2, below, is a continuation of the flow chart in Figure 6-1.

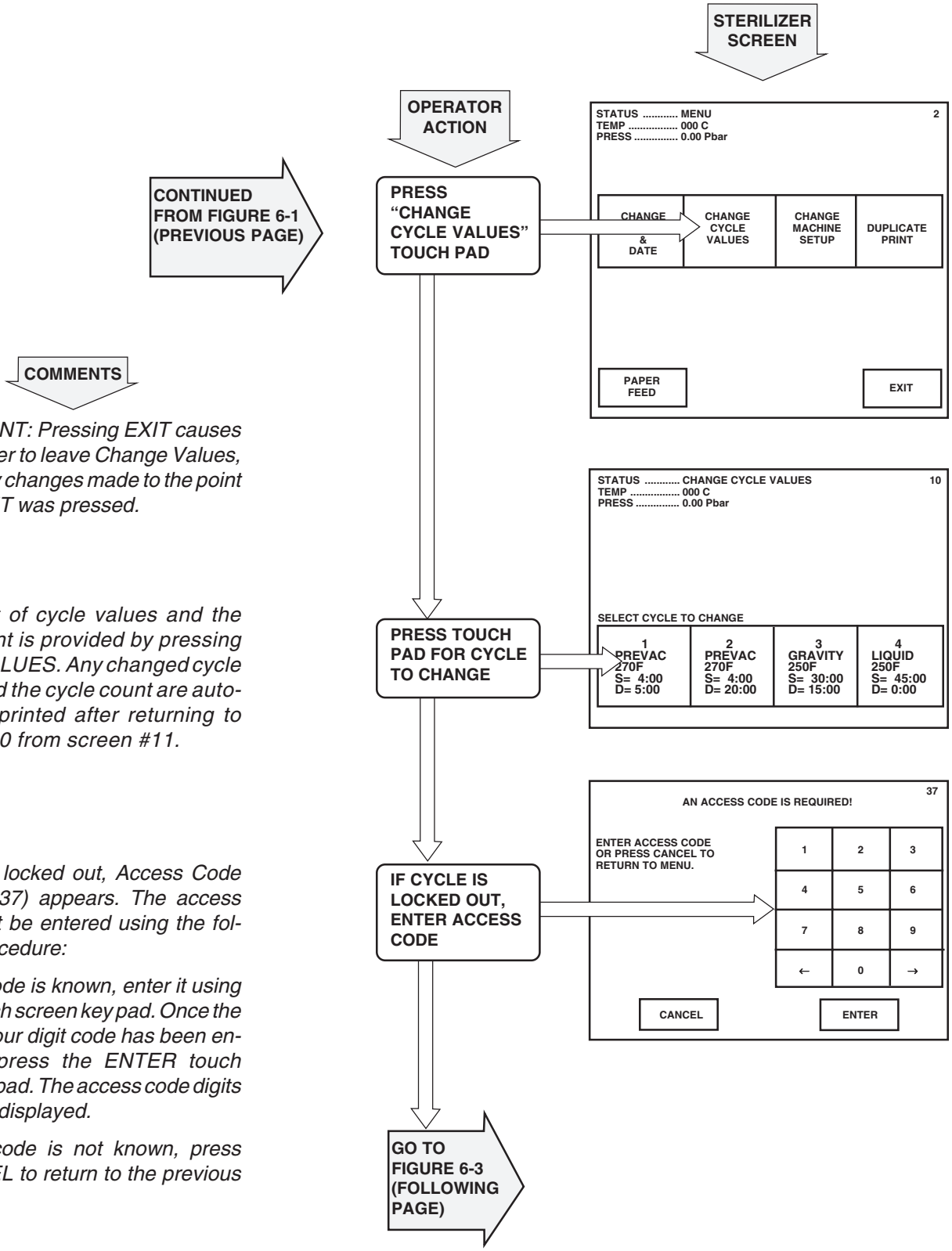
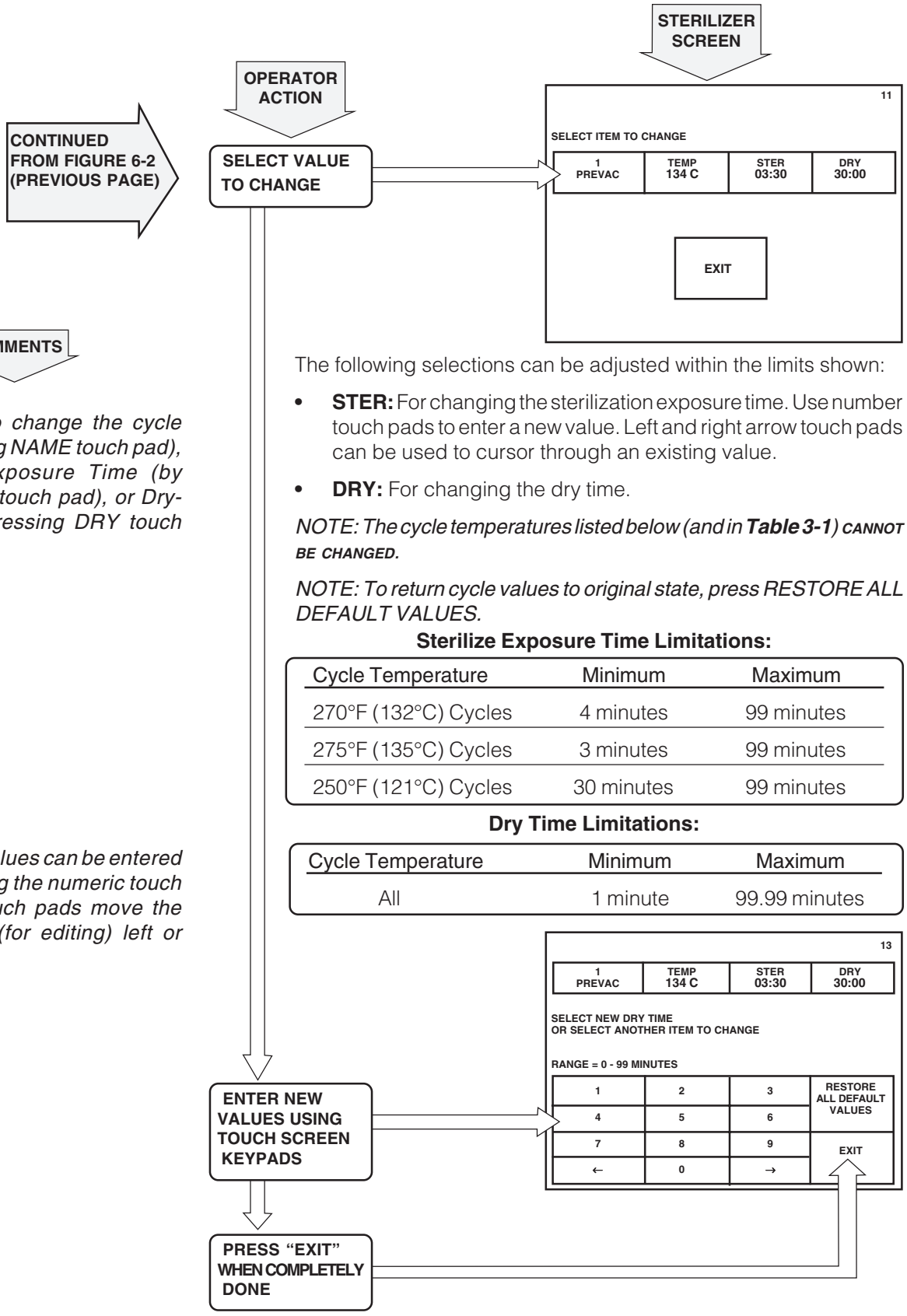


Figure 6-2. Change Cycle Values

Figure 6-3, below, is a continuation of the flow chart in Figure 6-2.



COMMENTS

It is possible to change the cycle type (by pressing NAME touch pad), Sterilization Exposure Time (by pressing STER touch pad), or Drying Time (by pressing DRY touch pad).

STER or DRY values can be entered or changed using the numeric touch pads. Arrow touch pads move the cursor postion (for editing) left or right.

The following selections can be adjusted within the limits shown:

- **STER:** For changing the sterilization exposure time. Use number touch pads to enter a new value. Left and right arrow touch pads can be used to cursor through an existing value.
- **DRY:** For changing the dry time.

*NOTE: The cycle temperatures listed below (and in **Table 3-1**) **CANNOT BE CHANGED.***

NOTE: To return cycle values to original state, press RESTORE ALL DEFAULT VALUES.

Sterilize Exposure Time Limitations:

Cycle Temperature	Minimum	Maximum
270°F (132°C) Cycles	4 minutes	99 minutes
275°F (135°C) Cycles	3 minutes	99 minutes
250°F (121°C) Cycles	30 minutes	99 minutes

Dry Time Limitations:

Cycle Temperature	Minimum	Maximum
All	1 minute	99.99 minutes

Figure 6-3. Change Cycle Values, Continued

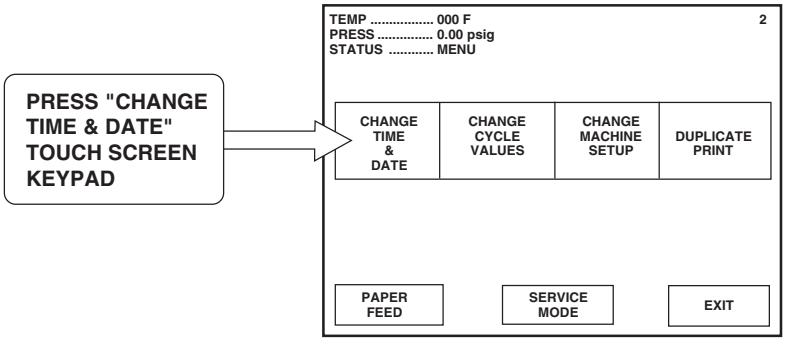
6.4 Change Time and Date

These screens adjust the time and date the sterilizer uses for all display and printout messages.

NOTE: Change Time and Date feature cannot be locked out under the Access Code feature.

The current time and date appears on the Off/Standby (screen #0) and Status (screen #1) screens. Time and date are also shown on printouts. These should be verified periodically. To change:

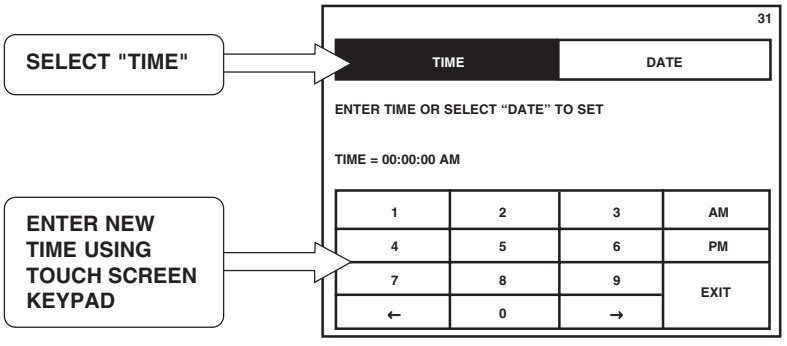
1. At screen #1, press MENU touch screen pad. This brings the MENU screen #2 onto the display.
2. At screen #2, press CHANGE TIME & DATE. The display advances to screen #31.



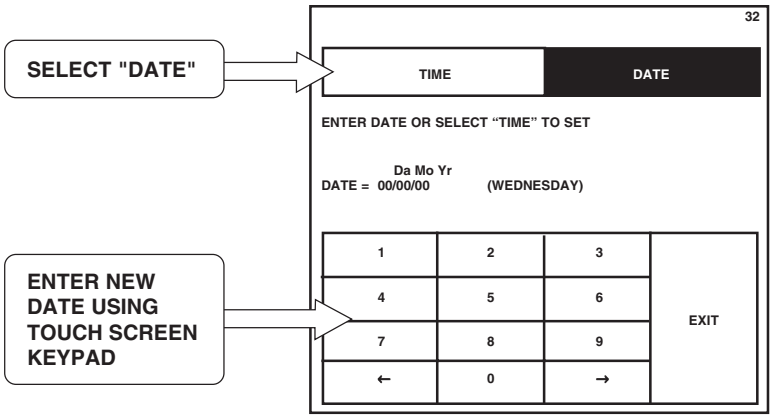
3. Make adjustments using procedures shown below:

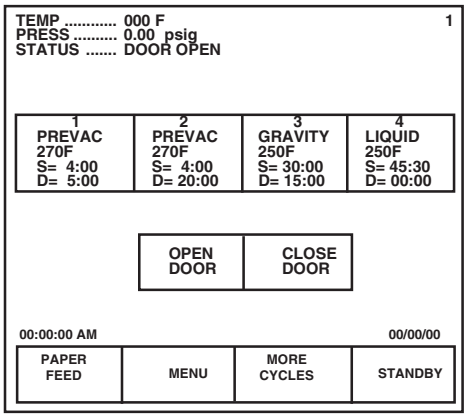
*NOTE: In the following procedures the **selected option** is always illustrated with a black background and white characters.*

- **TIME:** At screen #31 the TIME touch-screen pad is highlighted. Enter the correct time using the touch keypad.
  a. Press the number touch pads to enter hours, minutes, and seconds. For example, 10:45 would be entered by pressing 1 0 4 5 0 0.
  b. If an incorrect number is entered, press TIME to start over, or use the cursor key pads at the bottom of the screen to back up to an incorrect number.



c. Once the correct time has been entered, press DATE to adjust the date, or press EXIT to return to STATUS screen (#1).





- **DATE:** At screen #31, press DATE and screen #32 appears with the DATE touch-screen pad highlighted. Enter the correct date using the touch-screen keypad.

  a. Press the number touch pads to enter day, month and year. For example, 15 June 1993 would be entered by pressing 1 5 0 6 9 3. (This example uses DD/MM/YY date format. The format can be changed to MM/DD/YY, or other formats. Refer to Section 6.5.9.

  b. If an incorrect number is entered, press DATE again to start over, or use the cursor key pads at the bottom of the screen to backup to an incorrect number.

  c. Once the correct date has been entered, press EXIT to return to screen #1.

NOTE: The day of the week is automatically understood and registered by the control.

6.5 Change Machine Setup

All changes are made to displayed settings using touch screens. No mechanical adjustments to the sterilizer are necessary.

The Setup options are used to change the way the sterilizer operates in a general way. The control has an Access Code Security feature. If the Access Code is enabled, all or some of these options can be secured or “locked out” by the supervisor (see Access Code later in this section for more information on Access Code). All Setup options are accessed from the Setup Menu.

A summary of the setup options that can be adjusted are listed in **Table 6-4**. Each value is detailed in this section.

Table 6-4. Change Machine Setup

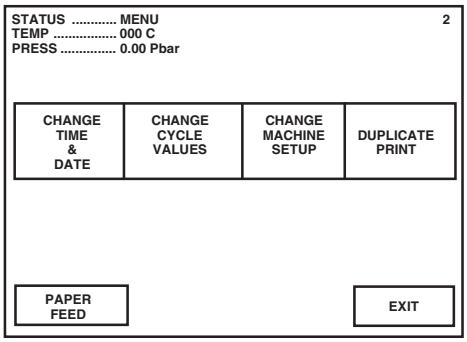
MACHINE SETUP	
Access Code	Once the access code has been set, all cycles values and Change Values options can be selected to lockout, making them unavailable for change by an operator without entering the Access Code.
Lockout	This setting is used to secure any of the Change Values options under the access code. Once a function is locked out, the Access Code must be entered before the setting can be accessed or changed.
Utilities Control	This setting permits the operator to program the sterilizer to automatically shut off its steam and water at the end of the work day, to conserve utilities. Shut down and power-up times can be programmed for any time of the day on Weekdays or the Weekend.
Language	This option can be used to select one of five factory set languages as the default for displays and printouts. Available languages are ENGLISH, SPANISH, ITALIAN, GERMAN and FRENCH. A BILINGUAL options allows for easy changes between English and Spanish, English and French, English and German or English and Italian.
Machine Number	This is used to assign a two character, alphanumeric code to the sterilizer. This code appears in the heading of all printouts. If this option is set to a value between 1 and 9, cycle complete tone sounds the set number of times.
Time Format	This setting allows the control to display times using either AM/PM format or 24 hour format.
Print Format	This setting allows the sterilizer to print a condensed version of the cycle printout to conserve on paper usage.
Audible Signals	This option allows adjustment of ALARM, END OF CYCLE and TOUCH PAD signals tones. Tones can be independently adjusted to one of three volume levels. ALARM signal tone cannot be turned off.
Units	This is used to select the temperature and pressure units displayed and printed out by the sterilizer. The sterilizer is capable of displaying temperature as either Fahrenheit or Celsius; pressure can be displayed as psig/inHg or bar. Bar is displayed and printed by the Century control as "Pbar" and "Vbar." Pressure above atmospheric displays and prints as Pbar; when chamber pressure drops below atmospheric, pressure displays and prints as Vbar.
Date Format	The sterilizer can be programmed to change the way the date is displayed and printed. The normal setting is to display Month/Day/Year (M/D/Y); but this can be changed to Year/Month/Day (Y/M/D), or Day/Month/Year (D/M/Y).
Duplicate Print	Sterilizer can be set to automatically furnish a duplicate printout of each cycle at the end of the cycle. First line will always read — DUPLICATE PRINT — and complete printout of cycle data will be furnished.

6.5.1 Access Code

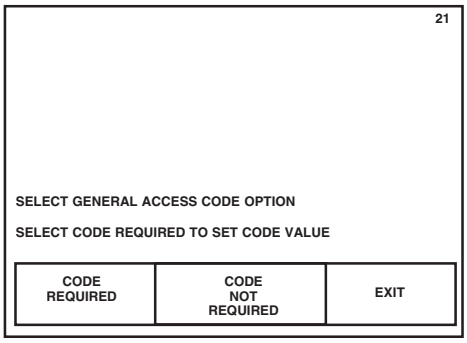
This setup option is used to control access to the adjustment functions of the Century Control. When the Access Code is turned on, a four-digit code must be entered before any locked out functions can be changed. The functions locked out are selected by the supervisor or operator.

Enabling or Disabling the Access Code

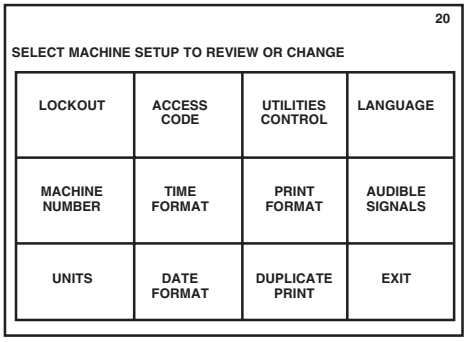
1. To access this utility, press CHANGE MACHINE SETUP touch-screen pad from the Menu screen at the operating end of the sterilizer.



2. The display changes to the Change Machine Setup screen (#20). Press the touch-screen pad labeled ACCESS CODE. The screen changes to the Access Code screen (#21).

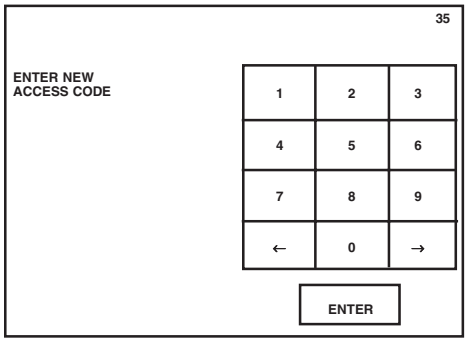


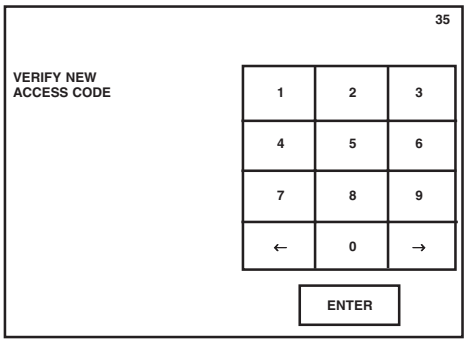
3. If the Access Code option is already turned on, the highlighted touch pad is CODE REQUIRED. If the Access Code is not on, highlighted touch pad is CODE NOT REQUIRED. Additionally, if the Access Code is not enabled, the LOCKOUT button does not appear on screen #20. Press appropriate touch pad if you want to change Access Code status, or press EXIT, if no change is necessary.



- **CODE REQUIRED.** Press CODE REQUIRED touch pad. The display changes to screen #35. This screen prompts for the entry of a four-digit code.

  a. Use the touch-screen key pad to enter the access code.





b. Once entered, screen prompts for Code to be re-entered for verification. If codes do not match, the control returns to screen #21.

c. If codes match, control returns to Change Machine Setup screen (#20).

- **CODE NOT REQUIRED.** If the CODE NOT REQUIRED touch-screen pad is highlighted and an Access Code is not required, press the EXIT touch-screen pad. The display returns to the Change Machine Setup screen (#20).

4. If the Access Code is already enabled and ACCESS CODE touch-screen pad is pressed at the Change Machine Setup screen (#20), the display advances to screen #37 and the control prompts the user to enter the Access Code.

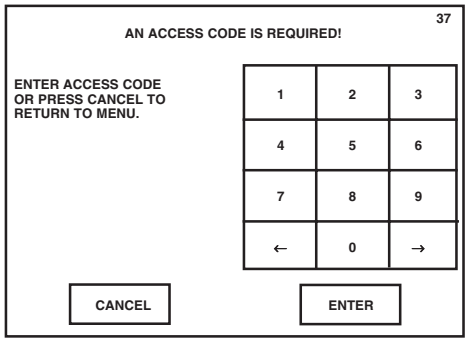
   a. Enter Code using the touch pads at the right of the screen.

   b. Once the Code has been entered, press the ENTER touch-screen pad to advance to Select Access Code screen (#21).

5. If the status of the Access Code does not need to be changed, press EXIT to return to the Change Machine Setup screen (#20).

Entering the Access Code, Once Enabled

Once the Access Code has been set, any locked out functions or cycle values are protected from unauthorized access. If any of these locked out functions are selected, screen #37 appears on the display.

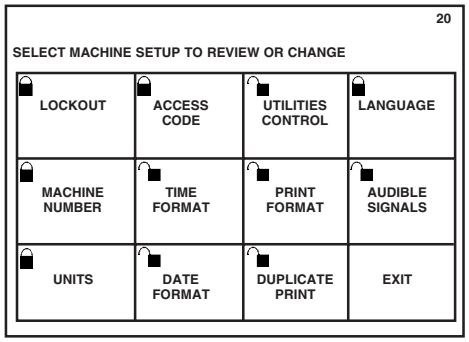


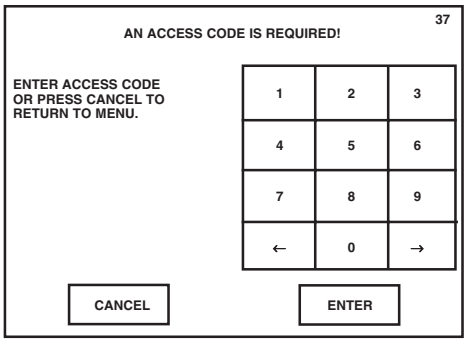
1. If the code is known, enter it using the touch-screen key pad. Once the entire four-digit code has been entered, press the ENTER touch-screen pad. The access code digits are not displayed.
2. If the code is not known, press CANCEL to return to the previous screen.

6.5.2 Lockout

This function is used to protect selected setup options from changes by unauthorized personnel. Any functions selected for lockout cannot be accessed without first entering the correct Access Code. Items can also be unlocked at this screen. Small lock graphics displayed in upper left hand corner of each touch pad indicate if item is locked or unlocked. (🔓 =unlocked, 🔒 = locked.)

1. To access this utility:
   a. Press MENU touch-screen pad from the Status screen (#1) at the operating end of the sterilizer.
   b. The screen changes to show the Menu screen (#2).
   c. Press the CHANGE MACHINE SETUP touch-screen pad, the display changes to the Setup screen (#20).
2. Press LOCKOUT touch-screen pad on the Setup menu screen (#20). The display changes to show the Enter Access Code screen (#37).





NOTE: This occurs only if an Access Code is required; otherwise the unit advances to screen #23.

a. Enter the code and press ENTER. The display advances to the Select Items to Lockout screen (#23).

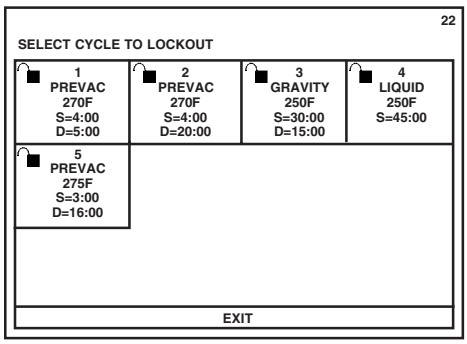
b. If the code is not known, lockouts cannot be performed, press CANCEL and display changes to screen #20.

c. If the wrong Access Code is entered, Access Denied screen (#36) appears and returns to screen #20.

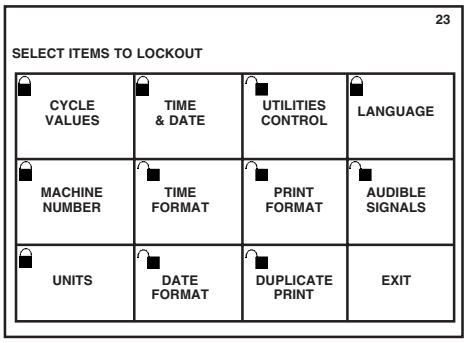
3. Press the touch-screen pad for the setup options to be locked out. The small lock graphic in the upper left corner of the screen changes to reflect the lockout status.

4. To select individual cycles to lock out, press CYCLE VALUES touch-screen pad. The display changes to the Select Cycles to Lockout screen (#22).

   a. Press the touch-screen pad(s) for the cycles you want to lock out. The lock graphic in the corner of the pad changes to reflect the lockout status.



   b. Press EXIT to return to the Lockout screen (#23).

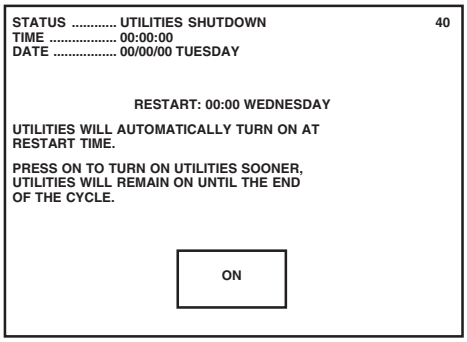


5. When all setup options to be locked out have been selected, press EXIT to return to the main setup menu.

6.5.3 Utilities Control

This screen is used to automatically control utility services to the sterilizer. As shipped from the factory, this utility is set to Manual Utilities control (i.e., utilities must be shut off and turned on by an operator). Using this utility, the sterilizer can be set to control the following:

- Daily shut off time
- Daily start up time
- Start up and shut off times for all week days
- Start up and shut off times for weekend days

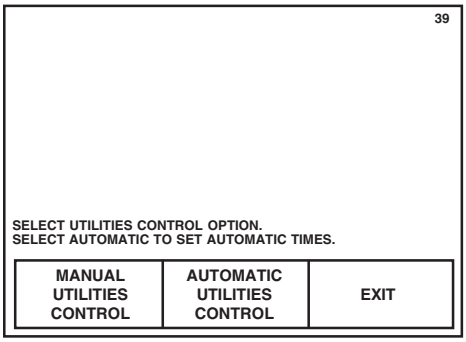


Screen displayed in Auto Utility Shutdown.

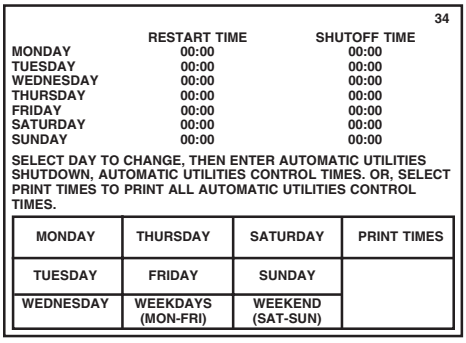
If the sterilizer is processing a cycle when the utility shut down time arrives, the cycle completes before the sterilizer shuts itself off. The sterilizer can be manually restarted for 30 minutes at any time during utility shutdown by pressing the ON touch-screen pad at the Off/Standby screen (#0).

1. To access this utility, press the MENU touch-screen pad from the Main Status screen (#1) at the operating end of the sterilizer.

2. The display changes to the Menu screen. Press the CHANGE MACHINE SETUP touch-screen pad. The display changes to the Setup screen. Press the UTILITIES CONTROL touch-screen pad. The screen changes to the Utilities Control screen (#39).

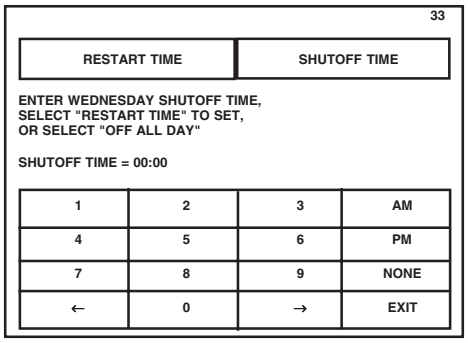


- **MANUAL UTILITIES CONTROL.** This is the default condition for the sterilizer. Press this touch-screen pad to cancel all automatic utilities controls. Press EXIT to return to the Change Machine Setup screen (#20).
- **AUTOMATIC UTILITIES CONTROL.** Press this to advance to screen #34.



a. A range of days can be selected by pressing either the WEEKDAYS/ (MON – FRI) or the WEEKEND/(SAT – SUN) touch pads. To select a specific day (or days) to adjust Utilities Control, press the appropriate touch-screen pad.

b. The display changes to screen #33. At this screen the start up times and shut off times are entered using the touch-screen key pad. The time is entered as a *four-digit number* (e.g., 0 6 0 0 for 6:00).



NOTE: If 24-hr time is selected, AM and PM buttons will not be displayed.

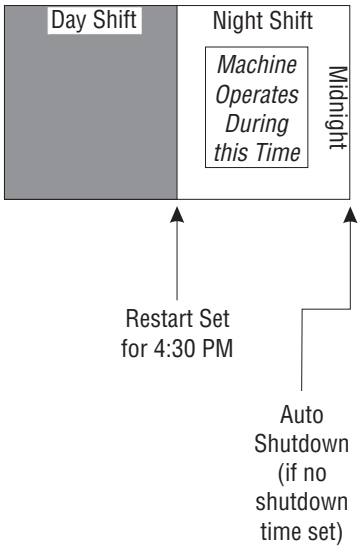
NOTE: The times entered for start up and shut down apply to all the days in the selected range.

NOTE: The NONE touch pad is used to set no start up or shut off times for the selected day(s). NONE can be used to turn off utilities for any or all days in the range. Screen #34 will show OFF ALL DAY for the selected day(s).

3. Once the start up and shut off times have been selected, press EXIT to return to the Change Machine Setup screen (#20).

See the following example to program automatic utilities control:

NOTE: Some sterilizers are operated exclusively on the night shift. In such cases, it may be useful to set shutdown and restart times so the sterilizer operates during the evening hours and is shut down during the day. The diagram below shows one example of how this can be done.



Example: The sterilizer is to be used five days a week (Monday through Friday), with a daily start up time of 07:00 and a shut down time of 18:30. The sterilizer will also be used Saturday morning from 06:00 through 12:00.

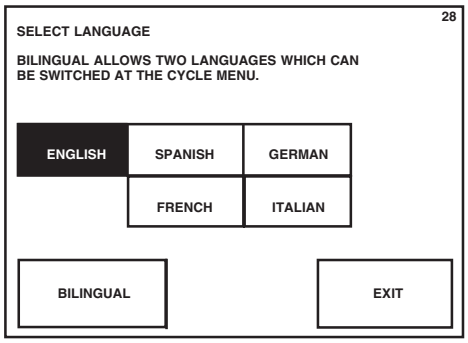
1. At screen #20, press the UTILITIES CONTROL touch pad.
2. At screen #39, press the AUTOMATIC UTILITIES CONTROL touch pad.
3. At screen #34, press the WEEKDAYS touch pad.
   a. Enter the 07:00 restart time by pressing 0 7 0 0 touch pads.
   b. Press the SHUTOFF TIME touch pad.
   c. Enter the 18:30 shut off time by pressing 1 8 3 0 touch pads.
   d. Then press the EXIT touch pad.
   e. At screen #34 press the SATURDAY touch pad.
   f. Enter the Saturday restart time by pressing the 0 6 0 0 touch pads.
   g. Enter the Saturday shut off time by pressing the 1 2 0 0 touch pads.
   h. Then press EXIT.
   i. Finally, at Screen #34, press SUNDAY, and at screen #33 press NONE.

The utilities control function is now programmed to turn the sterilizer's utilities on at 07:00 and off at 18:30 Monday through Friday. On Saturday the utilities will be on between 06:00 and 12:00. Utilities will be off all day Sunday.

6.5.4 Language

The Amsco Century Medium Steam Sterilizer 26 x 37. 5" is capable of operation with display screens and printouts in two of five languages. The factory default is ENGLISH. A BILINGUAL option can be used to easily change languages between shifts when workers are not familiar with a given language.

1. To access this utility, press the MENU touch-screen pad from the main status screen (#1) at the operating end of the sterilizer. The screen changes to show the CHANGE MACHINE SETUP screen (#20).
2. Press the LANGUAGE touch-screen pad on the CHANGE MACHINE SETUP screen (#20). The display advances to show SELECT LANGUAGE screen (#28).
3. Select the appropriate language by pressing one of the touch-screen pads in the middle of the display.

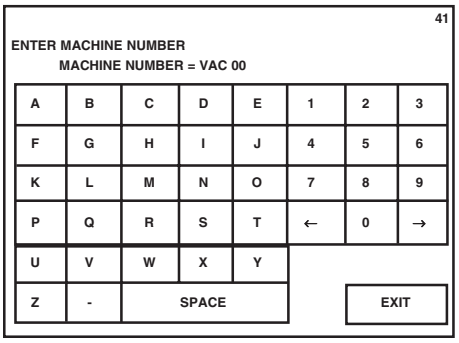


4. The BILINGUAL option can be selected to allow operators to toggle between English and the other language available without entering CHANGE MACHINE SETUP. The other language touch pad appears on the main menu. In this way, another language can be selected during operation without going to the CHANGE MACHINE SETUP menu.
5. Once the appropriate language is selected press EXIT to return to the Change Machine Setup screen (#20).

6.5.5 Machine Number

This is used to enter an identifying, two-character code into the sterilizer control. This code can be letters, numbers or a combination of both. The Machine Number code is printed out in the header for each cycle, allowing for processed goods to be traced back to a specific sterilizer when needed. If this option has been set to a value between 1 and 9, cycle complete tone sounds the set number of times.

1. To access this feature, press the MENU touch-screen pad at screen #1: at screen #2 press Change Machine Setup. The display advances to screen #20.
2. At screen #20, press MACHINE NUMBER touch pad; the display advances to screen #41.



3. At screen #41, enter the two-character code for the sterilizer. Any letter, number, or combination can be used as the machine number. Ensure, however, that each machine number used is different from any others that have been used in the facility.

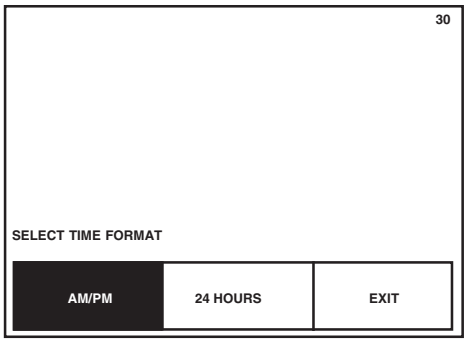
NOTE: Dash and space touch pads have been provided.

4. Once the machine number has been entered, press EXIT to return to screen #20.

6.5.6 Time Format

This setup option allows the operator to select the "format" for the time. The format determines how hours and minutes are displayed. There are two options — the default format shows time in the military format (referred to as 24 HOUR); the optional format shows time in AM/PM format.

1. To access this utility, press MENU touch-screen pad from the main status screen (#1) at the operating end of the sterilizer. The screen changes to show the Menu screen (#2). Press CHANGE MACHINE SETUP touch-screen pad, the display advances to screen #20.
2. At screen #20, press TIME FORMAT touch-screen pad. The display advances to screen #30.

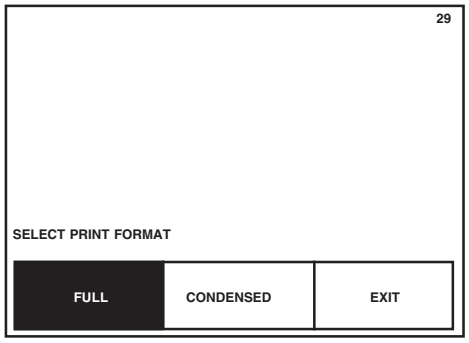


3. Select the appropriate time format by pressing one of the two touch-screen pads in the lower half of the display.
   - **AM/PM** – This is the standard civilian time format.
   - **24HRS** – This is a 24 hour format associated with military time-keeping.
4. Once the appropriate format has been selected, or if format does not need to be changed, press EXIT to return to the Change Machine Setup screen (#20).

6.5.7 Print Format

This setup option allows the operator to select the cycle printout "format." The format determines the type of printout the sterilizer provides during processing. Two options are available. The default FULL format provides status prints at each transition point in the cycle, plus additional status at interval points during each phase of the cycle. The optional CONDENSED format provides a cycle summary and complete time, without additional status prints at cycle interval points. The CONDENSED format can be used to conserve printer paper.

1. To access this utility, press the MENU touch-screen pad from the Status screen (#1) at the operating end of the sterilizer. The screen changes to show the menu screen (#2). Press the CHANGE MACHINE SETUP touch-screen pad.
2. Press PRINT FORMAT touch-screen pad on the Change Machine Setup screen (#20); the display advances to screen #29.



3. Select the appropriate print format by pressing one of the two touch-screen pads in the lower half of the display.
   - **FULL** – This is the standard format providing a status print for each phase of the cycle and status prints at the predetermined Print Interval.
   - **CONDENSED** – This format provides an abbreviated cycle status printout.
4. Once the appropriate format is selected, press EXIT to return to the Change Machine Setup screen (#20).

```
====== P R E V A C =====
CYCLE START AT  5:06:47P
           ON  3/12/01


LOAD                031205

  TEMP MAX=272.4F
  TEMP MIN=270.0F

CONDITION    =11:59
STERILIZE    = 4:00
EXHAUST      =22:00
TOTAL CYCLE =37:59

PRINTOUT CHECKED BY:

_____________________
```

Condensed Printout (Typical)

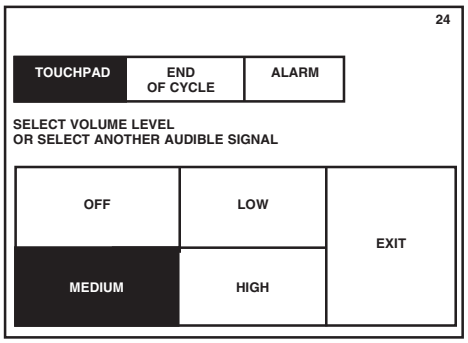
```
========================
====== P R E V A C =====
========================
CYCLE START AT 10:00:59A
           ON  3/15/01

CYCLE COUNT           395
OPERATOR _____________
STERILIZER     VAC 00

    STER TEMP = 270.0F
 CONTROL TEMP = 272.0F
    STER TIME =  4 MIN
     DRY TIME = 20 MIN

                      V=inHg
- TIME       T= F   P=psig
-------------------------
C 10:01:12A 103.0    0.1P
C 10:02:13A 223.4   13.1P
C 10:03:40A 181.4   10.1V
C 10:05:02A 263.9   26.0P
C 10:06:45A 185.5   12.6V
C 10:07:38A 263.0   26.0P
C 10:09:19A 186.1   14.4V
C 10:10:08A 263.3   26.1P
C 10:11:48A 189.9   16.9V
S 10:13:20A 270.0   29.0P
S 10:14:20A 271.6   29.6P
S 10:15:20A 272.0   29.7P
S 10:16:20A 271.9   29.8P
S 10:17:20A 271.9   29.8P
E 10:17:20A 271.9   29.8P
E 10:18:06A 219.5    3.4P
E 10:38:07A 158.7   27.9V
Z 10:39:21A 140.1    2.0V

LOAD                031502

  TEMP MAX=272.4F
  TEMP MIN=270.0F

CONDITION    =12:08
STERILIZE    = 4:00
EXHAUST      =22:01
TOTAL CYCLE =38:09
```

Full Printout (Typical)

6.5.8 Audible Signals

This setup option allows the operator to adjust selected audible signals heard at the sterilizer control. Three signals can be adjusted. Touch pad and end of cycle signals can be adjusted to one of three volume levels or turned off. Only the volume level of the Alarm signal can be adjusted. The Alarm signal cannot be turned off.

1. To access this utility, press the MENU touch-screen pad from the Status screen (#1), at the operating end of the sterilizer. The screen changes to show Change Machine Setup screen (#20).
2. Press CHANGE MACHINE SETUP on the menu screen, then AUDIBLE SIGNALS on the Setup screen (#20). The display advances to the Audible Signals setup screen (#24).



3. Select the signal you wish to adjust by pressing the appropriate touch-screen pad in the upper half of the screen.
   - **TOUCHPAD –** This is the signal sounded by the control whenever anyone presses a touch-screen pad.
   - **END OF CYCLE** – This is the signal heard when a cycle is complete.
   - **ALARM –** This is a two-tone signal heard during abnormal conditions.

   a. Each audible signal can be adjusted for volume.

      1) First press the touch-screen pad for the selected type of signal (e.g., ALARM, END OF CYCLE, or TOUCHPAD).

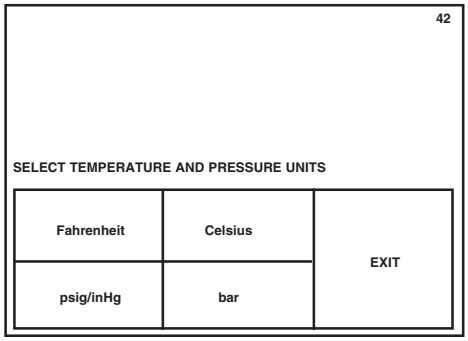
      2) Once the signal has been selected, press the required volume level (e.g., LOW, MEDIUM, or HIGH).

   b. TOUCHPAD and END OF CYCLE provide an OFF setting. The ALARM signal cannot be turned off.
4. Once the appropriate Audible Signals and Signal volumes have been selected, or if these do not need to be changed, press EXIT to return to the Change Machine Setup screen (#20).

6.5.9 Units

This feature is used to select or change the units the sterilizer uses when displaying and printing chamber temperature and pressure. This function allows selection of either Fahrenheit or Celsius units for displaying and printing temperature. Pressure units can be changed between psig/inHg or bars. Changing units does not require recalibrating the sterilizer.

1. To access this feature, press the Menu touch-screen pad at screen #1; at screen #2 press CHANGE MACHINE SETUP. The display advances to screen #20.
2. At screen #20, press UNITS touch-screen pad; the display advances to screen #42.

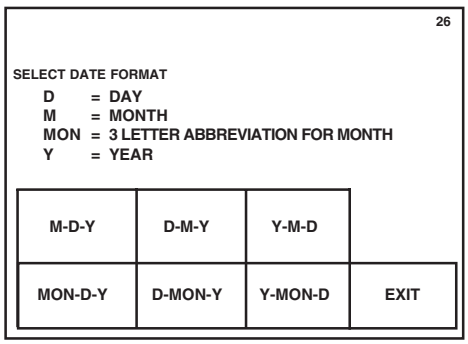


3. At screen #42, press the appropriate touch-screen pad for the type of unit or units required. Once all units have been selected, press EXIT to return to screen #20.

6.5.10 Date Format

This setup option allows the operator to select the "format" for the date. The format determines the order in which the month, day and year are displayed. There are three options, and the option selected is a matter of either preference or geographical location.

1. To access this utility, press the MENU touch-screen pad from the Status menu (#1). Press the CHANGE MACHINE SETUP touch pad, the control advances to the Change Machine Setup screen (#20).
2. Press DATE FORMAT touch-screen pad at screen #20; the display advances to screen #26.
3. Select the date format appropriate for your location by pressing one of the six touch-screen pads in the lower half of the display.
   - **M-D-Y** – Month-Day-Year
   - **D-M-Y –** Day-Month-Year



- **Y-M-D** – Year-Month-Day
- **MON-D-Y** – Month-Day-Year*
- **D-MON-Y –** Day-Month-Year*
- **Y-MON-D** – Year-Month-Day*

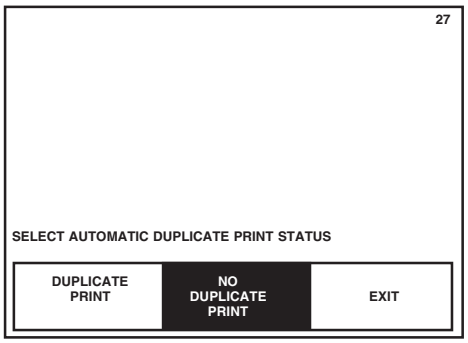
** When selecting the format touch pads in the bottom row, MON = 3 letter abbreviation of the month.*

4. Once the appropriate format has been selected, or if format does not need to be changed, press EXIT to return to the Change Machine Setup screen (#20).

6.5.11 Duplicate Print

This setup option allows the customer to select whether the sterilizer automatically supplies an extra printout at the end of the cycle. There are two options; the option selected depends on operating requirements in your facility. The default setting is for no duplicate print.

1. To access this utility, press MENU touch-screen pad from the main status screen (#1) at the operating end of the sterilizer. The screen changes to show the menu screen (#2). Press CHANGE MACHINE SETUP touch-screen pad; the display advances to screen #20.
2. Press DUPLICATE PRINT touch-screen pad on the Change Machine Setup screen. The display advances to screen #27.



3. At screen #27, select the appropriate print option by pressing one of the touch-screen pads in the lower half of the display.
   - **DUPLICATE PRINT –** The sterilizer provides a second printout of the last previous cycle after the cycle completes.
   - **NO DUPLICATE PRINT** – This is the normal default setting. The sterilizer does not provide an additional printout at the end of the cycle.
4. Once the appropriate format has been selected, or if format does not need to be changed, press EXIT to return to the Change Machine Setup screen (#20).

6.6 Leaving Change Values

1. Press EXIT at screen #20 to return to Menu screen #2.
2. Press EXIT at screen #2 to return to Status screen #1.

7.1 Preventive Maintenance Schedule

WARNING – SHOCK AND BURN HAZARD: Regularly scheduled preventive maintenance is required for safe and reliable operation of this equipment. Contact your STERIS Service Representative to schedule preventive maintenance.

Maintenance procedures described in *SECTIONS 7 AND 9* must be performed regularly at the indicated intervals, using the maintenance schedule in **Table 7-1** as a guide. Local conditions (water quality, usage, etc.) may require more frequent maintenance than indicated. Refer to **Table 9-1** for replacement parts list.

Customer should maintain a record of all maintenance procedures performed on the sterilizer.

If a problem occurs, refer to *SECTION 8, TROUBLESHOOTING.*

NOTE: Never permit unqualified persons to service the sterilizer.

Table 7-1. Preventive Maintenance Schedule for Amsco® Century™ Medium Steam Sterilizer 26 x 37.5 (660 x 950 mm)

Service Required	Minimum Frequency
1.0 PREPARATION FOR PREVENTIVE MAINTENANCE	
1.1 Discuss equipment with operators and check printouts.	6x per year
1.2 Follow appropriate safety procedures; prepare unit for preventive maintenance.	6x per year
2.0 DOOR ASSEMBLY (EACH DOOR ON A DOUBLE DOOR UNIT)	
2.1 Verify proper door and door proximity switch operation. Adjust switch(s) if needed.	6x per year
2.2 Check condition of door gasket for wear and tear. Replace as needed.	6x per year
2.3 Verify proper tension on power door cable (sliding door units, only).	6x per year
3.0 VALVES	
3.1 Verify each hand valve operates smoothly, check valve packing for leaks, rebuild or replace as needed.	
• Steam supply valve.	6x per year
• Water supply valve.	6x per year
• Emergency exhaust valve.	6x per year
3.2 Rebuild all solenoid valves.	1x per year
3.3 Inspect all check valves. Repair/replace as needed.	1x per year
3.4 Rebuild steam control valve (PRV).	1x per year
3.5 Verify that safety valve is not leaking.	6x per year
3.6 Verify operation of safety valve.	1x per year
3.7 Replace safety valve.	A/R

Table 7-1. Preventive Maintenance Schedule for Amsco Century Medium Steam Sterilizer 26 x 37.5 (continued)

Service Required		Minimum Frequency
4.0	**MISC PIPING COMPONENTS**	
4.1	Inspect steam strainer for debris, clean as needed.	2x per year
4.2	Inspect water strainer for debris, clean as needed.	2x per year
4.3	Inspect jacket strainer for debris, clean as needed.	2x per year
4.4	Inspect chamber drain strainer for debris, clean as needed.	6x per year
4.5	Replace air filter cartridge.	1x per year
4.6	Chamber and jacket gauge(s) - verify proper operation. Replace if needed.	6x per year
4.7	Rebuild chamber and jacket traps.	1x per year
4.8	Verify that there are no leaks.	6x per year
4.9	Verify that door lock piston operates correctly (hinged door models only).	6x per year
5.0	**CONTROL**	
5.1	Verify that printer and paper take-up operate properly. Check printout for darkness, missing dots, etc.	6x per year
5.2	Verify that all touch panels function properly (O.E. and N.O.E).	6x per year
5.3	Verify that the date and time are correct. If not, correct.	6x per year
5.4	Verify operation of the battery-backed RAM, replace as needed.	6x per year
5.5	Verify that the buzzer is working.	6x per year
5.6	Verify that the water level sensor operates properly.	6x per year
5.7	Verify that cooling fan operates properly.	6x per year
5.8	Replace fan filter.	1x per year
5.9	Check all service-settable values in Service Test Mode for factory recommended settings. Verify functional operation of each valve using the Service Test Mode.	1x per year
5.10	Verify temperature displays/printouts with potentiometer.	1x per year
5.11	Verify pressure settings as described in Maintenance Manual.	1x per year
6.0	**SAFETY TESTING**	
6.1	Inspect ground bond.	1x per year
6.2	Inspect steam connection to sterilizer.	1x per year
6.3	Inspect water connection to sterilizer.	1x per year
6.4	Inspect drain connection to sterilizer.	1x per year
7.0	**FINAL CHECKOUT AND TEST**	
7.1	Clean dirt and lint from components. Check all wiring, terminals, and socket connections for damage or fraying.	6x per year
7.2	Verify that unit has proper labels (caution, warning).	6x per year
7.3	Run machine through each cycle to verify proper operation. Check all displays and printouts. Note on tape: “TEST CYCLE."	6x per year
7.4	Verify that the shelves slide easily in and out of the chamber, if equipped.	6x per year
7.5	Reinstall any panel or cover removed. Carefully check area around sterilizer, and remove all materials used during inspection.	

7.1.1 Clean Chamber Drain Strainer

Important: The chamber drain strainer must be cleaned at least once a day, preferably in the morning before running the first cycle.

1. Remove the drain strainer from the drain in the bottom of the chamber as shown in Figure 7-1.
2. Remove any obvious debris from the strainer. If necessary, clear the screen in the strainer using a brush, wire, or similar tool.
3. Once it has been cleared of obvious debris, reverse flush the strainer under running water.
4. Replace the strainer in the chamber drain.

⚠ W A R N I N G – B U R N HAZARD: Allow sterilizer to cool to room temperature before performing any cleaning or maintenance procedures.

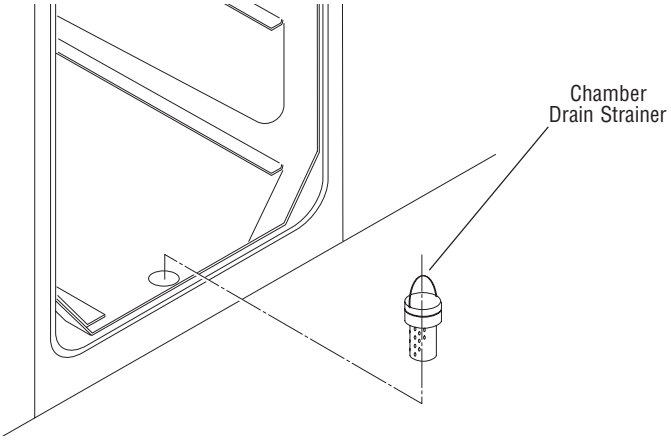


Figure 7-1. Remove Chamber Drain Strainer

7.1.2 Clean Chamber

Important: The entire chamber should be wiped down and rinsed following any spills or other soiling.

⚠ WARNING – FALL HAZARD: To prevent falls, keep floors dry by immediately wiping up any spilled liquids or condensation in sterilizer loading and unloading areas.

⚠ WARNING – BURN HAZARD: Allow sterilizer to cool to room temperature before performing any cleaning or maintenance procedures.

1. If applicable, the shelf assembly must be removed before cleaning the chamber.

   • Single Door

   a. Remove shelves from rack.

   b. Use a 1/8" hex wrench to loosen (but not remove) the set screws at the front of the rack assembly.

   c. Remove the rack assembly from the chamber.

   • Double Door

   a. Remove shelves from rack.

   b. Use a 1/8" hex wrench to loosen (but not remove) the set screws at each end of the rack assembly.

   c. Remove the rack assembly from the chamber.

Important: Chamber must be at room temperature, sterilizer off all night, before washing. Open the chamber emergency manual exhaust valve. See Page 4-2 for location.

2. Wash the inside of the chamber and shelf assembly (plus any other loading equipment) with a mild detergent solution such as STERIS® Liqui-Jet® or current STERIS equivalent. (Contact STERIS.)

CAUTION: Lifting the chamber float switch when cleaning the chamber may cause the sterilizer control to initiate a "Chamber Flooded" alarm. If this alarm condition occurs, the operator must turn the control power OFF then ON to clear the alarm. The control power switch is located in the mechanical area at the side of the sterilizer. Placing the sterilizer in standby does not clear this alarm.

CAUTION: Never use a wire brush, abrasives, or steel wool on door and chamber assembly. Do not use cleaners containing chloride on stainless-steel surfaces. Chloride-based cleaners will deteriorate stainless steel, eventually leading to failure of the vessel.

3. Once the chamber is clean, replace the shelf assembly using the reverse of the appropriate procedure given in step 1. Close the chamber emergency manual exhaust valve.
4. Professional cleaning of the chamber on a yearly basis (or as required due to local conditions) is suggested to maintain appearance of the chamber interior. Contact STERIS for information regarding this service.

7.2 Weekly Maintenance

7.2.1 Flush Chamber Drain

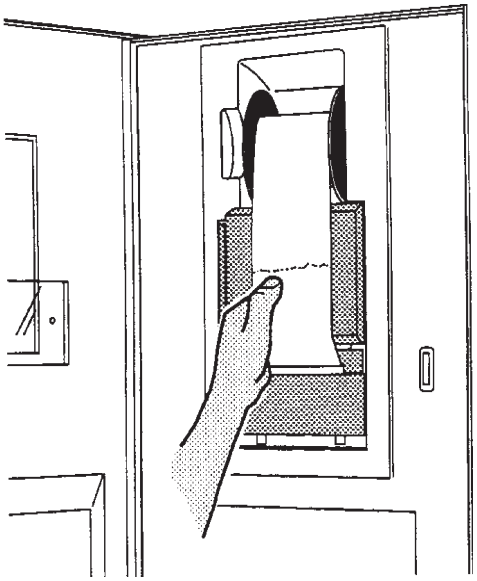
WARNING – BURN HAZARD: Allow sterilizer and accessories to cool to room temperature before performing any cleaning or maintenance procedures.

Flush chamber drain as follows whenever the line becomes clogged:

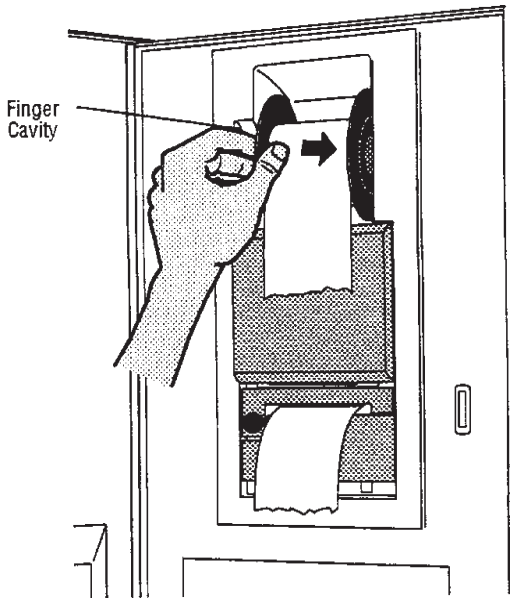
1. Turn off steam supply valve. Wait until jacket pressure is zero. Wait until chamber has cooled to room temperature.
2. Remove chamber drain strainer (Figure 7-1). Clean strainer using procedures given above, if necessary.
3. Pour a solution of 60 mL (~1/4 cup) of STERIS LiquiJet 2 (Contact your local STERIS representative). and 500 mL (~1 pint) of hot water into the drain. Solution may puddle in the bottom of the chamber.
4. Should the detergents in step 3 be unavailable, you may use a hot solution of 15mL (~1 tablespoon) of trisodium phosphate to 500 mL (~1 pint) of hot water.
5. Open door and place strainer back in drain.

7.2.2 Change Printer Paper Roll

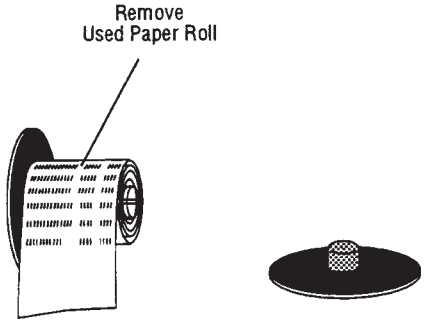
The printer paper roll should be changed whenever a colored stripe is visible on one or both edges of the printout paper.



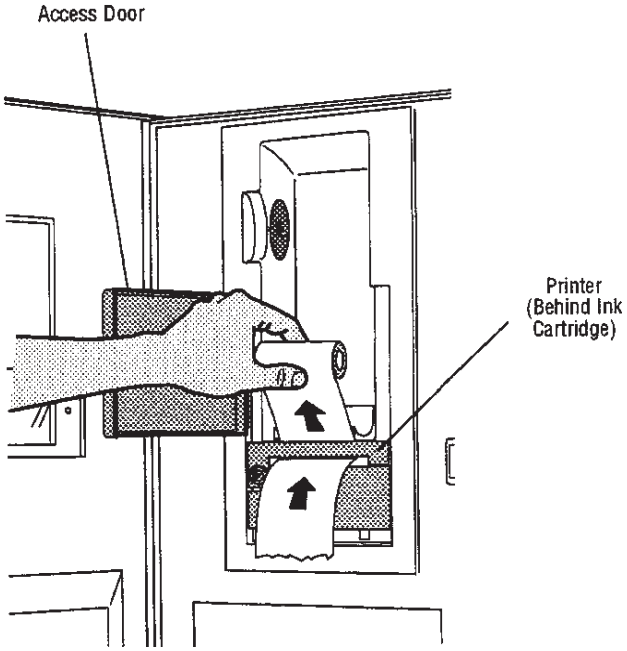
1. Tear paper between take-up spool and printer.



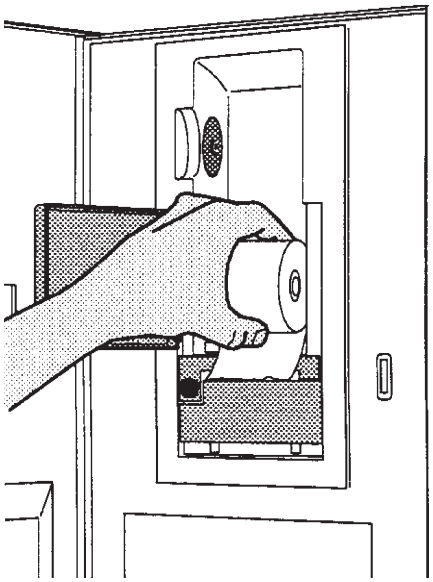
2. Remove take-up spool from drive by inserting fingers in cavity as shown and pushing spool to the right.



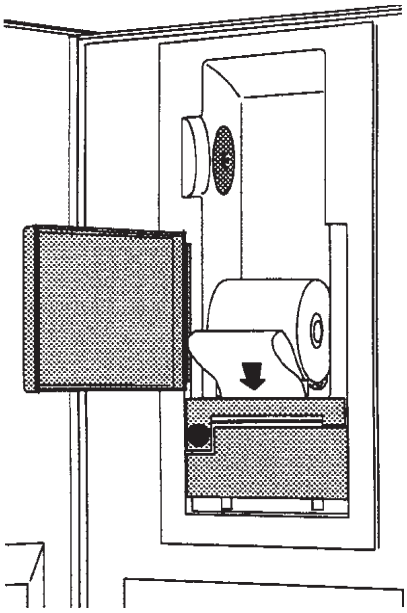
3. Pull off right end of spool and remove used paper roll from spindle.



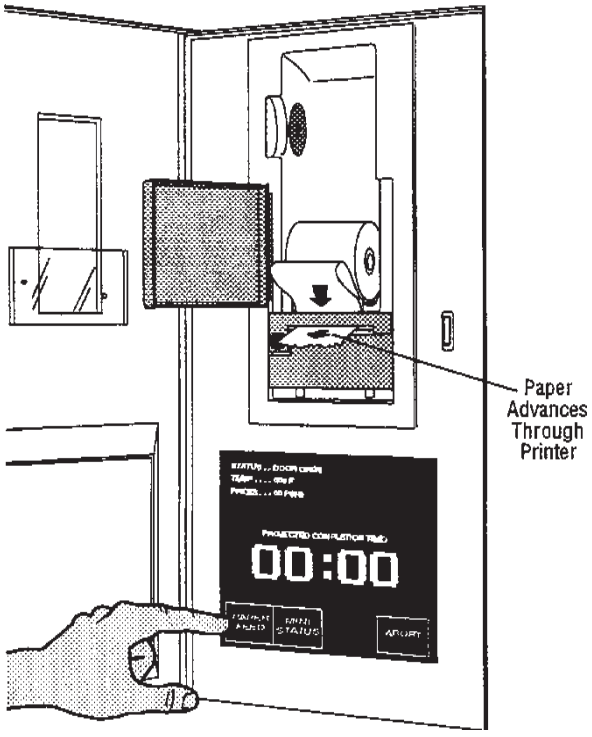
4. Open access door and remove old paper roll, **gently** pulling any remaining tape up and out of printer.



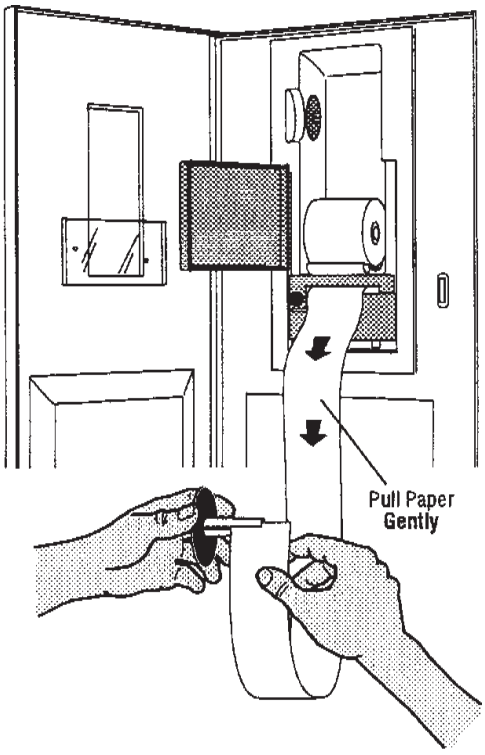
5. Insert new paper roll.



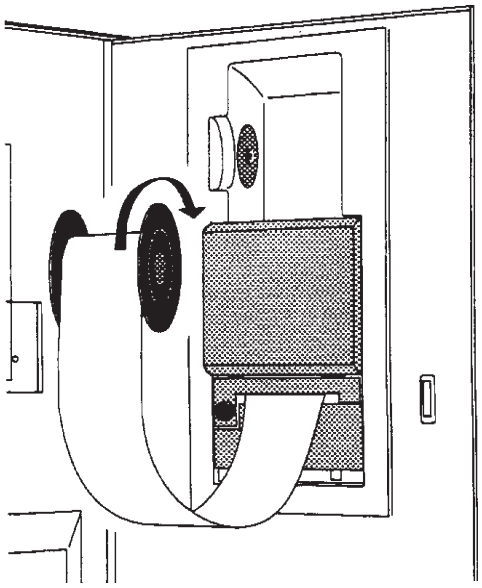
6. Insert end of paper into printer slot just behind ink cartridge.



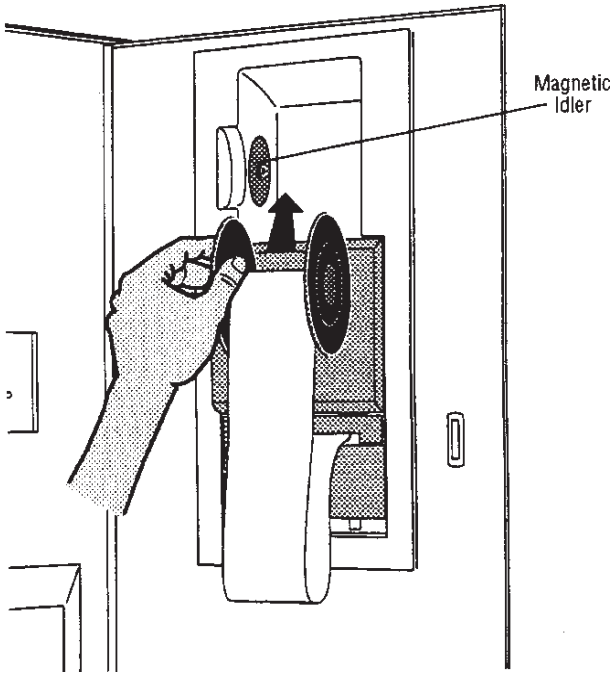
7. Press "PAPER FEED" touch-screen pad on display until paper advances through printer and ink cartridge, exiting the front.



8. Continue pressing "PAPER FEED" (or pull paper **gently**) until about 46cm (18") of paper hangs out of printer. Insert end of paper into slot of take-up spool, then replace right end of spool.



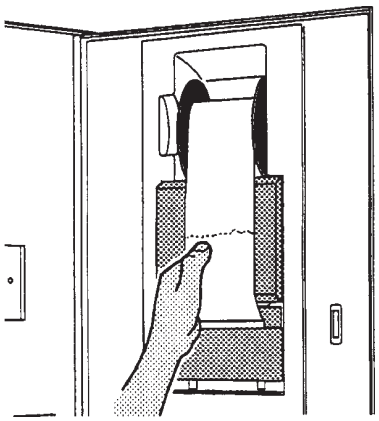
9. Rotate spool in direction shown until paper is secure.



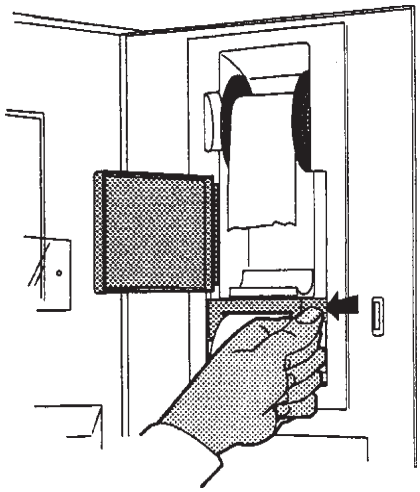
10. Reinstall take-up spool on magnetic idler. Manually roll up slack paper.

7.2.3 Change Printer Ink Cartridge

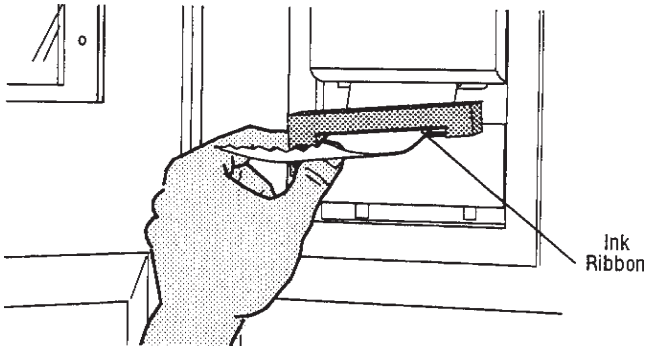
The printer ink cartridge should be changed as soon as the type on printouts is light or faded, and before printouts become difficult to read.



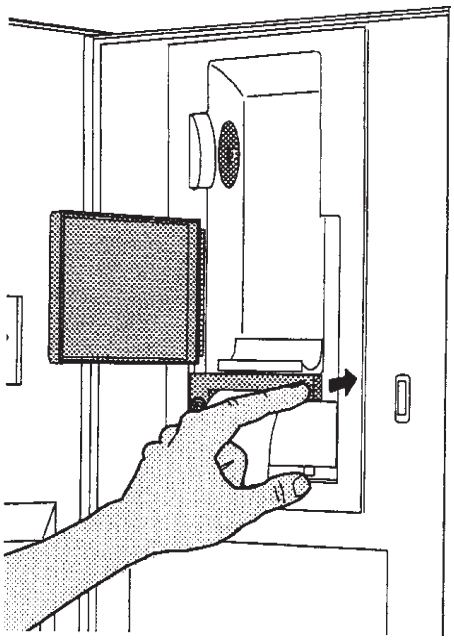
1. Tear paper between take-up spool and printer.



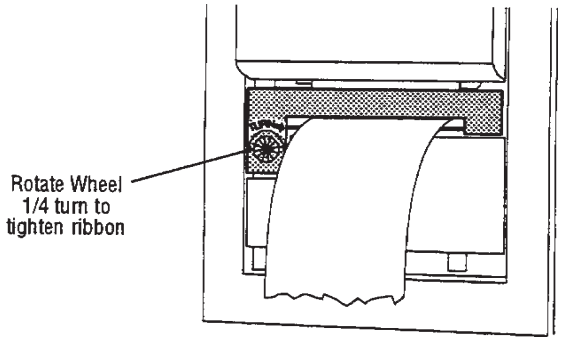
2. Open access door, then press on right end of ink cartridge, until left end of cartridge pops out of the printer.



3. Slip cartridge off end of paper, slip new cartridge over paper in the same way as before, making sure paper slides between ink cartridge housing and ink ribbon.



4. Install left end of cartridge first, then push right end in as shown, snapping it into place.



5. Retighten ribbon by rotating wheel on left side of cartridge 1/4 turn. Then see "Changing Paper Roll", steps 8 through 10 to reinstall take-up spool.

8.1 General

⚠ WARNING – PERSONAL INJURY AND/OR EQUIPMENT DAMAGE HAZARD: Repairs and adjustments to this equipment must be made only by fully qualified service personnel. Maintenance performed by inexperienced, unqualified persons or installation of unauthorized parts could cause personal injury or result in costly equipment damage.

⚠ WARNING–SHOCK HAZARD: Disconnect all utilities to sterilizer before servicing. Always follow OSHA Lockout-Tagout and electrical safety-related work practice standards. (See CFR 1910.147 and .331 through .335.)

⚠ WARNING–BURN HAZARD: Allow sterilizer to cool to room temperature before performing any cleaning or maintenance procedures.

This section pictorially lists and describes all the possible alarm conditions which may occur when operating the Amsco® Century™ Medium Steam Sterilizer 26" x 37.5" (660 x 950 mm).

If a problem occurs that is not described in this section, please call STERIS®. A trained service technician will promptly place your sterilizer in proper working condition.

NOTE: Never permit unqualified persons to service the sterilizer.

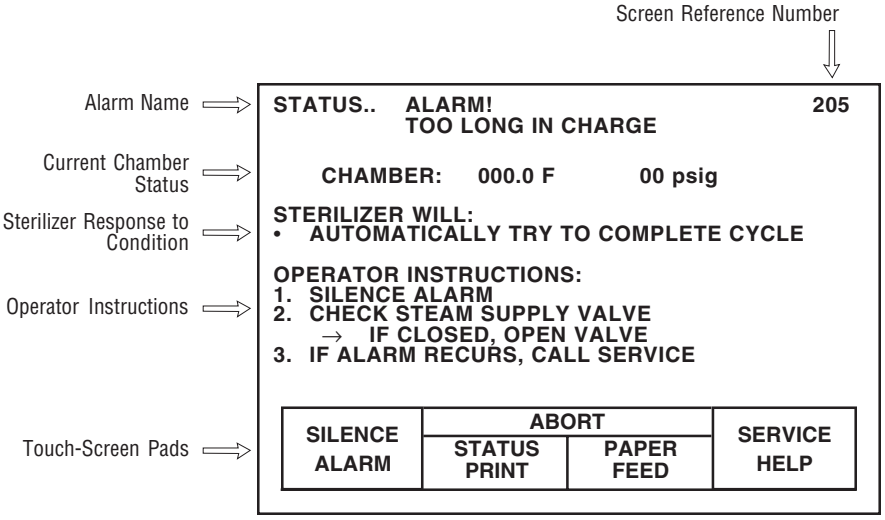


Figure 8-1. Typical Alarm Screen

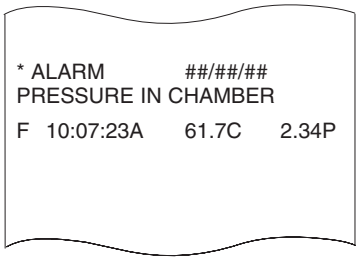
8.1.1 Typical Alarm Screen

When an alarm condition occurs, the alarm tone sounds and the touch screen automatically displays the corresponding alarm screen. Typically, each alarm screen indicates the alarm name, current chamber status, current sterilizer activity, and operator instructions (see Figure 8-1).

Touch-screen pads, located along bottom of alarm screen, are used to perform the following functions:

- Pressing **SILENCE ALARM** turns off the alarm tone.
- Pressing **STATUS PRINT** generates a printout of the current temperature and pressure in the sterilizer chamber at the time the touch pad was pressed.
- Pressing **PAPER FEED** advances the printer paper up by one line.
- Pressing **SERVICE HELP** advances display to the corresponding service information screen. This screen provides the qualified service technician with possible causes and advanced corrective actions for that alarm condition.

Important: In the event of an alarm condition, the operator should always follow the instructions indicated on the alarm screen.



Full Print Format Shown

Figure 8-2. Typical Alarm Printout

8.1.2 Typical Alarm Printout

When an alarm occurs the printer automatically generates a printout, typically listing alarm name, time alarm occurred, current chamber status, and any associated sensor temperature. See Figure 8-2.

8.2 In-Cycle Alarms

The following alarm screens will appear only during cycle operation:

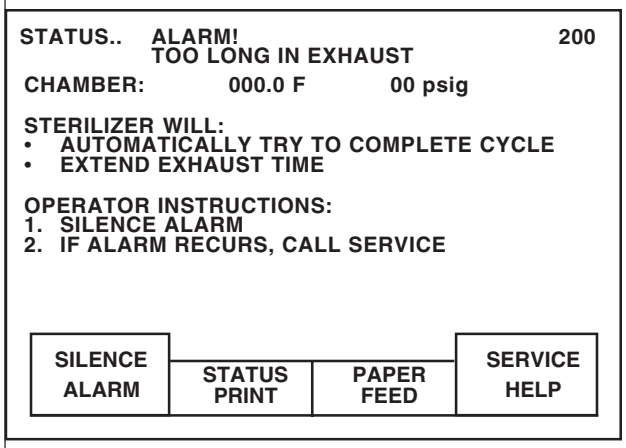
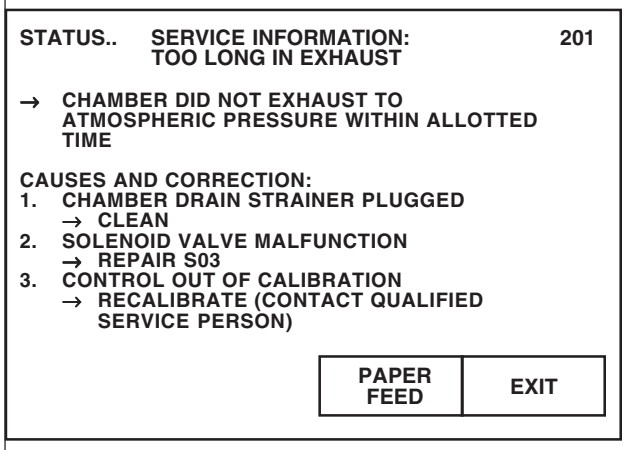
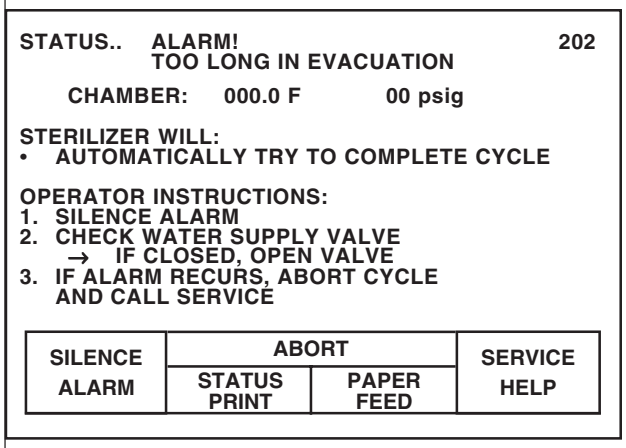
Alarm	Description	Screen with Operator Instructions
8.2.1 Too Long In Charge	Occurs if chamber does not reach the set temperature within the allotted time.	**STATUS.. ALARM! 205** **TOO LONG IN CHARGE** **CHAMBER: 000.0 F 00 psig** **STERILIZER WILL:** **• AUTOMATICALLY TRY TO COMPLETE CYCLE** **OPERATOR INSTRUCTIONS:** **1. SILENCE ALARM** **2. CHECK STEAM SUPPLY VALVE** **→ IF CLOSED, OPEN VALVE** **3. IF ALARM RECURS, CALL SERVICE** [SILENCE ALARM] [ABORT: STATUS PRINT / PAPER FEED] [SERVICE HELP]

Screen with Service Instructions

STATUS.. SERVICE INFORMATION: 206
TOO LONG IN CHARGE
→ CHAMBER DID NOT REACH STERILIZE TEMPERATURE WITHIN ALLOTTED TIME

CAUSES AND CORRECTION:
1. STEAM PRESSURE LESS THAN 50 psig
→ CHECK STEAM SUPPLY PIPING
2. STEAM REGULATOR MALFUNCTION
→ REPAIR
3. SOLENOID VALVE MALFUNCTION
→ REPAIR S09
→ REPAIR S02
4. CONTROL OUT OF CALIBRATION
→ RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON)

[ABORT] [PAPER FEED] [EXIT]

Alarm	Description	Screen with Operator Instructions
8.2.2 Too Long In Exhaust	Occurs if chamber does not exhaust to 4 psig (0.28 bar) within the allotted time.	**Screen with Operator Instructions**  STATUS.. ALARM! 200 TOO LONG IN EXHAUST CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY TRY TO COMPLETE CYCLE • EXTEND EXHAUST TIME OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, CALL SERVICE SILENCE ALARM / STATUS PRINT / PAPER FEED / SERVICE HELP **Screen with Service Instructions**  STATUS.. SERVICE INFORMATION: 201 TOO LONG IN EXHAUST → CHAMBER DID NOT EXHAUST TO ATMOSPHERIC PRESSURE WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. CHAMBER DRAIN STRAINER PLUGGED → CLEAN 2. SOLENOID VALVE MALFUNCTION → REPAIR S03 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) PAPER FEED / EXIT
8.2.3 Too Long In Evacuation	Occurs if chamber does not reach the set evacuation level within the allotted time.	**Screen with Operator Instructions**  STATUS.. ALARM! 202 TOO LONG IN EVACUATION CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY TRY TO COMPLETE CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CHECK WATER SUPPLY VALVE → IF CLOSED, OPEN VALVE 3. IF ALARM RECURS, ABORT CYCLE AND CALL SERVICE SILENCE ALARM / ABORT (STATUS PRINT / PAPER FEED) / SERVICE HELP

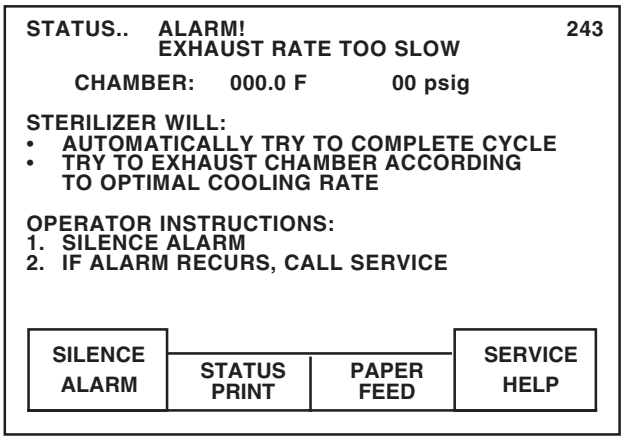
Alarm	Description	Screens with Service Instructions
Too Long In Evacuation (Continued)	*NOTE: This alarm has two service help screens.*	STATUS.. SERVICE INFORMATION: TOO LONG IN EVACUATION 203 → CHAMBER DID NOT REACH REQUIRED VACUUM LEVEL WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. WATER PRESSURE LESS THAN 20 psig → CHECK WATER SUPPLY PIPING 2. CHAMBER DRAIN STRAINER PLUGGED → CLEAN 3. CHECK VALVE MALFUNCTION → REPAIR 4. SOLENOID VALVE MALFUNCTION → REPAIR 5. DOOR SEAL NOT ACTIVATED → CHECK SEAL → CHECK SEAL STEAM AND EXHAUST [ABORT] [STATUS PRINT] [PAPER FEED] [MORE HELP]
		STATUS.. SERVICE INFORMATION: TOO LONG IN EVACUATION 204 → CHAMBER DID NOT REACH REQUIRED VACUUM LEVEL WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 6. LEAK IN PLUMBING → REPAIR → RUN A LEAK TEST 7. CONTROL OUT OF CALIBRATION → RECALIBRATE CONTROL (CONTACT QUALIFIED SERVICE PERSON) [PAPER FEED] [EXIT]
		Screen with Operator Instructions
8.2.4 Too Long In Air Break	Occurs if chamber does not air break the vacuum to 2 inHg (0.07 Vbar) within the allotted time.	STATUS.. ALARM! TOO LONG IN AIR BREAK 225 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY TRY TO COMPLETE CYCLE • EXTEND AIR BREAK TIME OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

Alarm	Description	Screen with Service Instructions
Too Long In Air Break (Continued)		STATUS.. SERVICE INFORMATION: 226 TOO LONG IN AIR BREAK → CHAMBER DID NOT AIR BREAK VACUUM TO 2 inHG WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. AIR INLET FILTER PLUGGED → REPLACE 2. SOLENOID VALVE MALFUNCTION → REPAIR S01 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) PAPER FEED | EXIT
8.2.5 Under Sterilize Temperature	Occurs if chamber temperature drops below sterilize temperature.	**Screen with Operator Instructions** STATUS.. ALARM! 223 UNDER STERILIZE TEMPERATURE CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY RESTART STERILIZE TIMER AND CONTINUE CYCLE AFTER SET TEMP. IS REACHED OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, CALL SERVICE SILENCE ALARM | ABORT (STATUS PRINT | PAPER FEED) | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 224 UNDER STERILIZE TEMPERATURE → CHAMBER TEMPERATURE DROPPED BELOW STERILIZE TEMPERATURE BY UNDERTEMP TEMPERATURE VALUE CAUSES AND CORRECTION: 1. STEAM PRESSURE LESS THAN 50 PSIG → CHECK STEAM SUPPLY PIPING 2. CHAMBER STEAM TRAP MALFUNCTION → REPAIR 3. SOLENOID VALVE MALFUNCTION → REPAIR S09 → REPAIR S02 4. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) ABORT | PAPER FEED | EXIT

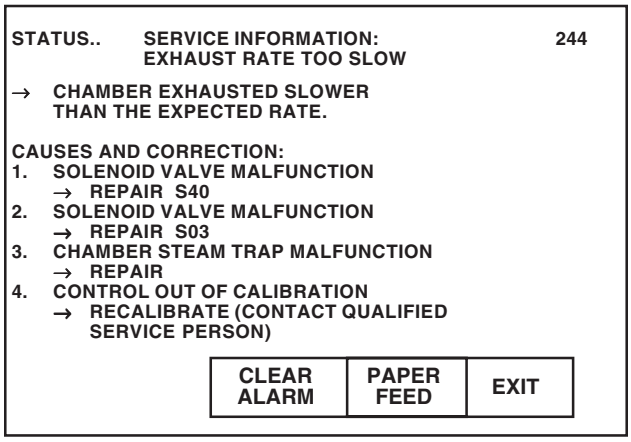
Alarm	Description	Screen with Operator Instructions
8.2.6 Over Sterilize Temperature *NOTE: The control temperature is the value the sterilizer maintains during the sterilize phase. This value is 2°F above the cycle sterilize temperature set point. The over temperature value is added to the control temperature value to arrive at the temperature which causes this cycle alarm.*	Occurs if chamber temperature exceeds the maximum sterilize temperature (Control temp. + over temp. value).	**Screen with Operator Instructions** STATUS.. ALARM! 235 OVER STERILIZE TEMPERATURE CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY TRY TO COMPLETE CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, ABORT CYCLE AND CALL SERVICE SILENCE ALARM | ABORT (STATUS PRINT | PAPER FEED) | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 236 OVER STERILIZE TEMPERATURE → STERILIZE TEMPERATURE IS ABOVE SETPOINT BY MORE THAN PRESCRIBED AMOUNT CAUSES AND CORRECTION: 1. STEAM PRESSURE MORE THAN 50 psig → CHECK STEAM SUPPLY PIPING 2. CHAMBER STEAM TRAP MALFUNCTION → REPAIR 3. SOLENOID VALVE MALFUNCTION → REPAIR S09 → REPAIR S02 4. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) ABORT | PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.2.7 Door Unsealed	Occurs if steam pressure in door seal drops below 5 psig (0.34 Pbar).	**Screen with Operator Instructions** STATUS.. ALARM! 207 DOOR UNSEALED CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE • EXHAUST OR AIR BREAK CHAMBER TO ATMOSPHERIC PRESSURE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 208 DOOR UNSEALED → STEAM PRESSURE IN DOOR SEAL BELOW 5 psig CAUSES AND CORRECTION: 1. SEAL PRESSURE SWITCH MALFUNCTION → CHECK PS1(PS2) CONNECTIONS → READJUST PS1(PS2) → REPAIR PS1(PS2) 2. SEAL NOT ACTIVATED → CHECK SEAL STEAM → CHECK SEAL EXHAUST 3. SOLENOID VALVE MALFUNCTION → REPAIR S35(S36) [CLEAR ALARM] [PAPER FEED] [EXIT]
8.2.8 Chamber Pressure/ Temperature Failure	Occurs if chamber pressure or temperature readings are outside the normal steam range during sterilize phase.	**Screen with Operator Instructions** STATUS.. ALARM! CHAMBER 219 PRESSURE/TEMPERATURE FAILURE CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

Alarm	Description	Screen with Service Instructions
Chamber Pressure/ Temperature Failure (Continued)		STATUS.. SERVICE INFO: CHAMBER PRESSURE/TEMPERATURE FAILURE 220 → PRESSURE OR TEMPERATURE OUTSIDE NORMAL STEAM RANGE CAUSES AND CORRECTION: 1. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 2. TRANSDUCER, CP, MALFUNCTION → REPAIR 3. RTD PROBE, RTD1, MALFUNCTION → REPAIR 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE [PAPER FEED] [EXIT]
8.2.9 Exhaust Rate Too Fast	Occurs if liquid cycle fast exhaust rate is too fast.	**Screen with Operator Instructions** STATUS.. ALARM! EXHAUST RATE TOO FAST 241 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY TRY TO COMPLETE CYCLE • TRY TO EXHAUST CHAMBER ACCORDING TO OPTIMAL COOLING RATE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: EXHAUST RATE TOO FAST 242 → CHAMBER EXHAUSTED FASTER THAN THE EXPECTED RATE. CAUSES AND CORRECTION: 1. SOLENOID VALVE MALFUNCTION → REPAIR S40 2. SOLENOID VALVE MALFUNCTION → REPAIR S03 3. CHAMBER STEAM TRAP MALFUNCTION → REPAIR 4. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) [CLEAR ALARM] [PAPER FEED] [EXIT]

Alarm	Description	Screen with Operator Instructions
8.2.10 Exhaust Rate Too Slow	Occurs if liquid cycle slow exhaust rate is too slow.	

Screen with Service Instructions



Alarm	Description	Screen with Operator Instructions
8.2.11 Recorder Deviation Alarm	Occurs if the two temperature sensing elements in the chamber drain probe read more than 1°F apart.	STATUS.. ALARM! 281 RECORDER DEVIATION CHAMBER: 00.0 F 00 psig RECORDER: 300.0 F STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED]
8.2.12 Door Pressure Failure **(Hinged Door Models Only)**	Occurs if door pressure lock is sensed engaged while in cycle.	**Screen with Operator Instructions** STATUS.. ALARM! 284 DOOR LOCK SWITCH MALFUNCTION CHAMBER: 00.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE • EXHAUST OR AIR BREAK CHAMBER TO ATMOSPHERIC PRESSURE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 285 DOOR LOCK SWITCH MALFUNCTION: → STEAM PRESSURE IN DOOR SEAL BELOW 5 PSIG (0.34 BAR) CAUSES AND CORRECTION: 1. DOOR LOCK CYLINDER DL-1(2) NOT EXTENDED → CHECK FUNCTION OF DL-1(2) → CHECK THAT LS5(6) IS ON WHEN DL-1(2) IS EXTENDED 2. DOOR LOCK SWITCH MALFUNCTION → CHECK LS5(LS6) CONNECTIONS → READJUST LS5(LS6) 3. SEAL NOT ACTIVATED → CHECK SEAL STEAM → CHECK SEAL EXHAUST 4. SOLENOID VALVE MALFUNCTION → REPAIR S35(S36) [CLEAR ALARM] [PAPER FEED] [EXIT]

8.3 Out-of-cycle Alarms

The following alarm screens will appear only when the sterilizer is **not processing** a cycle.

Alarm	Description	Screen with Operator Instructions
8.3.1 Too Long To Close Door	Occurs if door switch does not make contact within allotted time.	STATUS.. ALARM! 239 TOO LONG TO CLOSE DOOR CHAMBER: 000.0 F 00 psig STERILIZER WILL: • REMAIN IN ALARM CONDITION UNTIL DOOR IS CLOSED OPERATOR INSTRUCTIONS: 1. CLEAR ALARM 2. CHECK DOOR FOR OBSTRUCTION → REMOVE OBSTRUCTION AND CLOSE DOOR 3. IF DOOR WILL NOT CLOSE, CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

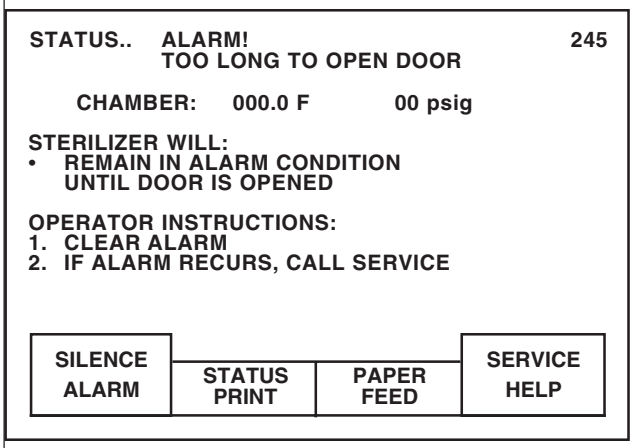
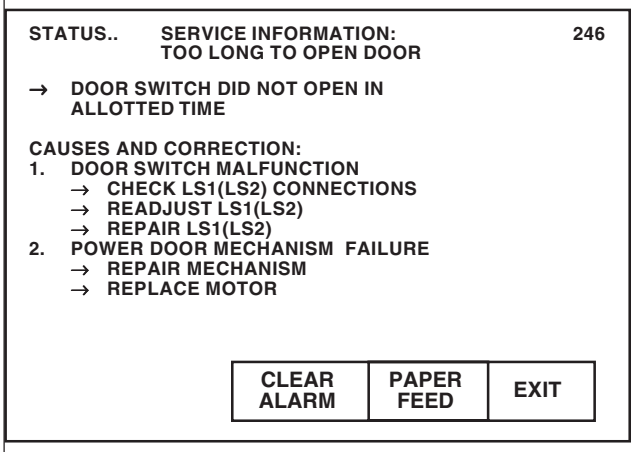
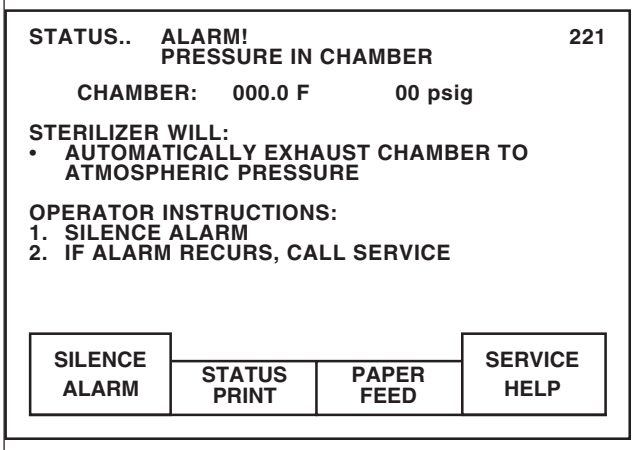
Screen with Service Instructions

STATUS.. SERVICE INFORMATION: 240
TOO LONG TO CLOSE DOOR

→ DOOR SWITCH DID NOT MAKE IN ALLOTTED TIME

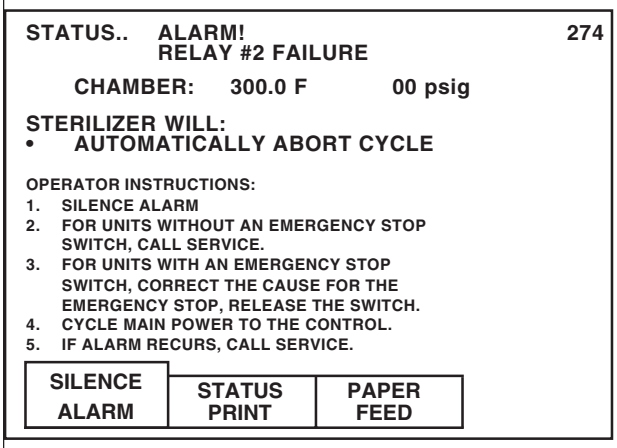
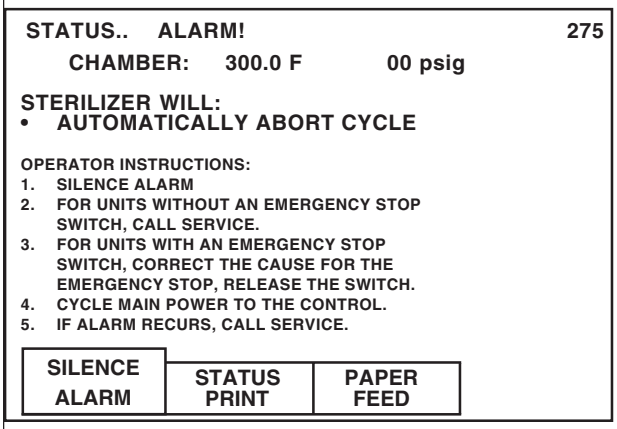
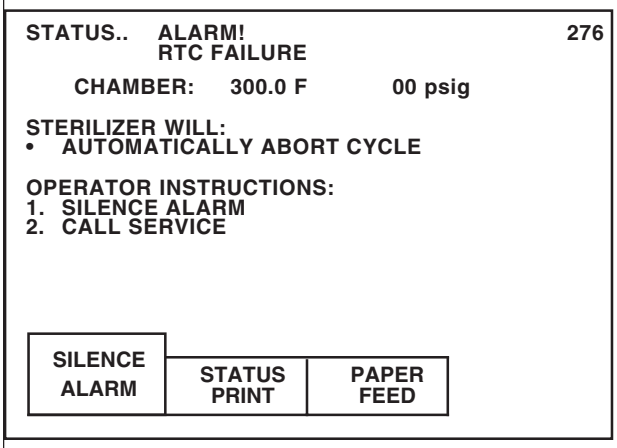
CAUSES AND CORRECTION:
1. DOOR SWITCH MALFUNCTION
   → CHECK LS1(LS2) CONNECTIONS
   → READJUST LS1(LS2)
   → REPAIR LS1(LS2)
2. POWER DOOR MECHANISM FAILURE
   → REPAIR MECHANISM
   → REPLACE MOTOR

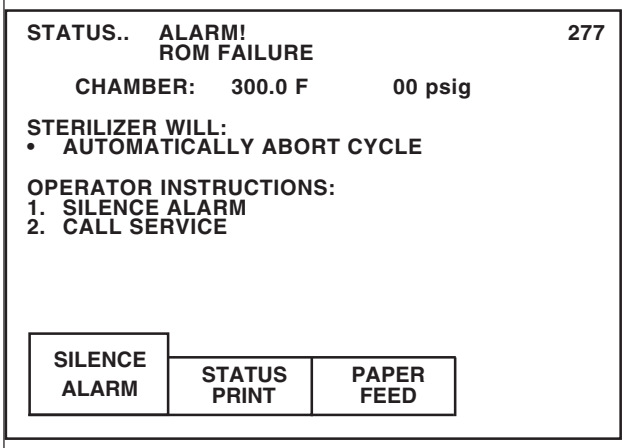
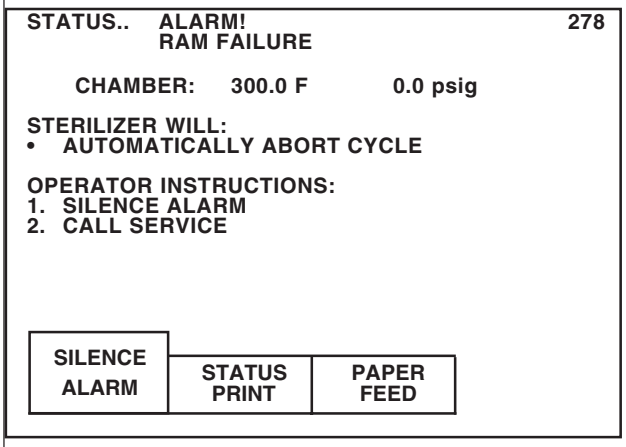
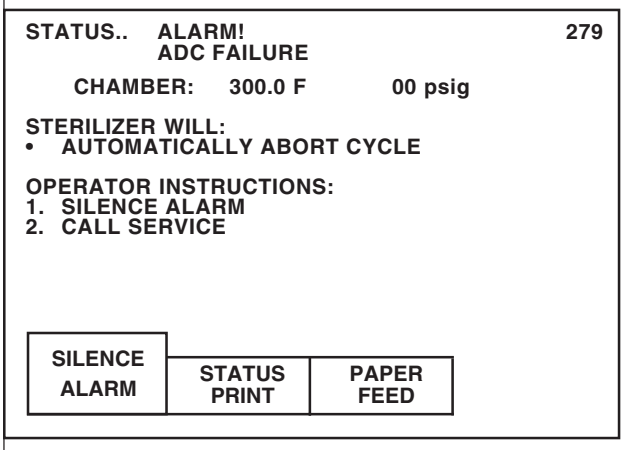
[CLEAR ALARM] [PAPER FEED] [EXIT]

Alarm	Description	Screen with Operator Instructions
8.3.2 Too Long To Open Door	Occurs if door switch does not open within the allotted time.	**Screen with Operator Instructions**  STATUS.. ALARM! 245 TOO LONG TO OPEN DOOR CHAMBER: 000.0 F 00 psig STERILIZER WILL: • REMAIN IN ALARM CONDITION UNTIL DOOR IS OPENED OPERATOR INSTRUCTIONS: 1. CLEAR ALARM 2. IF ALARM RECURS, CALL SERVICE SILENCE ALARM / STATUS PRINT / PAPER FEED / SERVICE HELP **Screen with Service Instructions**  STATUS.. SERVICE INFORMATION: 246 TOO LONG TO OPEN DOOR → DOOR SWITCH DID NOT OPEN IN ALLOTTED TIME CAUSES AND CORRECTION: 1. DOOR SWITCH MALFUNCTION → CHECK LS1(LS2) CONNECTIONS → READJUST LS1(LS2) → REPAIR LS1(LS2) 2. POWER DOOR MECHANISM FAILURE → REPAIR MECHANISM → REPLACE MOTOR CLEAR ALARM / PAPER FEED / EXIT
8.3.3 Pressure In Chamber	Occurs if 2 psig (0.14 Pbar) pressure is sensed in the chamber.	**Screen with Operator Instructions**  STATUS.. ALARM! 221 PRESSURE IN CHAMBER CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY EXHAUST CHAMBER TO ATMOSPHERIC PRESSURE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. IF ALARM RECURS, CALL SERVICE SILENCE ALARM / STATUS PRINT / PAPER FEED / SERVICE HELP

Alarm	Description	Screen with Service Instructions
Pressure In Chamber (Continued)		STATUS.. SERVICE INFORMATION: PRESSURE IN CHAMBER 222 → 2 psig PRESSURE SENSED IN CHAMBER WHEN NOT IN CYCLE CAUSES AND CORRECTION: 1. SOLENOID VALVE MALFUNCTION → REPAIR S02 2. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 3. TRANSDUCER, CP, MALFUNCTION → REPAIR → RECALIBRATE 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE PAPER FEED | EXIT
8.3.4 Waste Temperature Probe Failure	Occurs if waste line temperature reading is outside the normal range.	**Screen with Operator Instructions** STATUS.. ALARM! WASTE TEMPERATURE PROBE FAILURE 215 CHAMBER: 000.0 F 00 psig WASTE: 000.0 F STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE SILENCE ALARM | STATUS PRINT | PAPER FEED | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: WASTE TEMP PROBE FAILURE 216 → RTD PROBE, RTD2, OUTPUT IS OUTSIDE NORMAL RANGE CAUSES AND CORRECTION: 1. LOOSE CONNECTIONS IN PROBE WIRING → REPAIR 2. PROBE FAILED → REPLACE → RECALIBRATE 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.3.5 Atmospheric Pressure Alarm	Occurs if atmospheric pressure is greater than 1 psi from the calibrated atmospheric pressure.	**STATUS.. ALARM! 269** **ATMOSPHERIC PRESSURE ALARM** **CHAMBER: 000.0 F 00 psig** **ALTITUDE SETTING: 0 TO 1000 FEET** **OPERATOR INSTRUCTIONS:** **1. SILENCE ALARM** **2. CALL SERVICE** **SILENCE ALARM** | **STATUS PRINT** | **PAPER FEED** | **SERVICE HELP** **Screen with Service Instructions** **STATUS.. SERVICE INFORMATION: 270** **ATMOSPHERIC PRESSURE ALARM** **→ THE ATMOSPHERIC PRESSURE IS GREATER THAN 1 PSI FROM THE CALIBRATED ATMOSPHERIC PRESSURE** **CAUSES AND CORRECTION:** **1. THE STERILIZER IS AT A HIGHER ALTITUDE THAN WHERE IT WAS ORIGINALLY CALIBRATED (FACTORY)** **→ SET ALTITUDE** **2. CONTROL OUT OF CALIBRATION** **→ RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON)** **3. LOOSE CONNECTION IN TRANSDUCER WIRING** **→ REPAIR** **4. TRANSDUCER FAILED** **→ REPLACE** **→ RECALIBRATE** **CLEAR ALARM** | **PAPER FEED** | **EXIT**
8.3.6 Relay #1 Failure	Occurs if the switched neutral relay associated with Door Seal 'A,' Door Seal 'B' and the Chamber Float Switch fails.	**Screen with Operator Instructions** **STATUS.. ALARM! 273** **RELAY #1 FAILURE** **CHAMBER: 300.0 F 00 psig** **STERILIZER WILL:** **• AUTOMATICALLY ABORT CYCLE** **OPERATOR INSTRUCTIONS:** **1. SILENCE ALARM** **2. FOR UNITS WITHOUT AN EMERGENCY STOP SWITCH, CALL SERVICE.** **3. FOR UNITS WITH AN EMERGENCY STOP SWITCH, CORRECT THE CAUSE FOR THE EMERGENCY STOP, RELEASE THE SWITCH.** **4. CYCLE MAIN POWER TO THE CONTROL.** **5. IF ALARM RECURS, CALL SERVICE.** **SILENCE ALARM** | **STATUS PRINT** | **PAPER FEED**

Alarm	Description	Screen with Operator Instructions
8.3.7 Relay #2 Failure	Occurs if the switched neutral relay associated with Door 'A' closed switch fails.	 **Screen with Operator Instructions**
8.3.8 Relay #3 Failure	Occurs if the switched neutral relay associated with Door 'B' closed switch fails.	 **Screen with Operator Instructions**
8.3.9 RTC Failure	Occurs if the real time clock timer chip on the main control circuit board fails.	

Alarm	Description	Screen with Operator Instructions
8.3.10 ROM Failure	Occurs if the Read Only memory on the main control circuit board fails.	 **Screen with Operator Instructions**
8.3.11 RAM Failure	Occurs if the Random Access memory on the main control circuit board fails.	 **Screen with Operator Instructions**
8.3.12 ADC Failure	Occurs if the Analog to Digital Board on the main control circuit board fails.	

8.4 Sensor Alarms

The following alarm screens will appear anytime the sterilizer is energized. The sensors are continually monitored whenever the sterilizer is in or out of cycle.

Alarm	Description	Screen with Operator Instructions
8.4.1 Water In Chamber	Occurs if excess water is sensed in the chamber.	**Screen with Operator Instructions** STATUS.. ALARM! 209 WATER IN CHAMBER CHAMBER: 000.0 F 00 psig WARNING - BURN HAZARD! CHAMBER MAY BE FILLED WITH STEAM CONDENSATE OPERATOR INSTRUCTIONS: 1. DO NOT OPEN DOOR 2. SILENCE ALARM 3. CALL SERVICE IMMEDIATELY [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 210 WATER IN CHAMBER → EXCESS WATER SENSED IN CHAMBER, WARNING! BURN HAZARD CAUSES AND CORRECTION: 1. JACKET STRAINER PLUGGED → CLEAN 2. JACKET TRAP FAILED CLOSED → REPAIR 3. CHAMBER TRAP FAILED CLOSED → REPAIR 4. WATER ENTERED CHAMBER THROUGH STEAM PIPING → CHECK BOILER OR STEAM GENERATOR → REPAIR PIPING 5. WATER FLOAT SENSOR MALFUNCTION → REPAIR [PAPER FEED] [EXIT]
8.4.2 Too Long In Jacket Charge	Occurs if jacket does not reach set temperature within allotted time.	**Screen with Operator Instructions** STATUS.. ALARM! 231 TOO LONG IN JACKET CHARGE CHAMBER: 000.0 F 00 psig JACKET: 000.0 F STERILIZER WILL: • REMAIN IN ALARM CONDITION UNTIL JACKET TEMP. IS REACHED OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CHECK STEAM SUPPLY VALVE → IF CLOSED, OPEN VALVE 3. IF ALARM RECURS, CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

Alarm	Description	Screen with Service Instructions
Too Long In Jacket Charge (Continued)		STATUS.. SERVICE INFORMATION: TOO LONG IN JACKET CHARGE 232 → JACKET DID NOT REACH REQUIRED TEMPERATURE WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. STEAM PRESSURE LESS THAN 50 PSIG → CHECK STEAM SUPPLY PIPING 2. STEAM REGULATOR MALFUNCTION → REPAIR 3. SOLENOID VALVE MALFUNCTION → REPAIR S09 4. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) PAPER FEED | EXIT
8.4.3 Too Long To Seal Door	Occurs if door seal does not reach 5 psig (0.34 Pbar) within allotted time.	**Screen with Operator Instructions** STATUS.. ALARM! TOO LONG TO SEAL DOOR 227 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • REMAIN IN ALARM CONDITION UNTIL DOOR IS SEALED OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CHECK STEAM SUPPLY VALVE → IF CLOSED, OPEN VALVE 3. IF ALARM RECURS, CALL SERVICE SILENCE ALARM | STATUS PRINT | PAPER FEED | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: TOO LONG TO SEAL DOOR 228 → DOOR SEAL DID NOT REACH 5 psig WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. SEAL PRESSURE SWITCH MALFUNCTION → READJUST PS1(PS2) → REPAIR PS1(PS2) 2. SEAL NOT ACTIVATING → CHECK SEAL STEAM → CHECK SEAL EXHAUST 3. SOLENOID VALVE MALFUNCTION → REPAIR S35(S36) ABORT | CLEAR ALARM | PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.4.4 Too Long To Unseal Door	Occurs if door seal pressure does not drop below 5 psig (0.35 Pbar) within allotted time.	**Screen with Operator Instructions** STATUS.. ALARM! 229 TOO LONG TO UNSEAL DOOR CHAMBER: 000.0 F 00 psig STERILIZER WILL: • REMAIN IN ALARM CONDITION UNTIL DOOR IS UNSEALED OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE 3. IF LOAD MUST BE REMOVED, REFER TO EMERGENCY DOOR OPERATION PROCEDURE IN OPERATING MANUAL. [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: 230 TOO LONG TO UNSEAL DOOR → DOOR SEAL PRESSURE NOT BELOW 5 psig WITHIN ALLOTTED TIME CAUSES AND CORRECTION: 1. SEAL PRESSURE SWITCH MALFUNCTION → READJUST PS1(PS2) → REPAIR PS1(PS2) 2. SEAL NOT RETRACTING → CHECK SEAL STEAM → CHECK SEAL EXHAUST 3. SOLENOID VALVE MALFUNCTION → REPAIR S37(S38) → REPAIR S35(S36) [PAPER FEED] [EXIT]
8.4.5 Chamber Pressure Transducer Failure	Occurs if chamber pressure reading is outside the normal range.	**Screen with Operator Instructions** STATUS.. ALARM! CHAMBER PRESSURE TRANSDUCER FAILURE 217 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

Alarm	Description	Screen with Service Instructions
Chamber Pressure Transducer Failure (Continued)		STATUS.. SERVICE INFO: CHAMBER PRESSURE TRANSDUCER FAILURE 218 → TRANSDUCER, CP, OUTPUT VOLTAGE IS OUTSIDE NORMAL RANGE CAUSES AND CORRECTION: 1. LOOSE CONNECTION IN TRANSDUCER WIRING → REPAIR 2. TRANSDUCER FAILED → REPAIR → RECALIBRATE 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE PAPER FEED | EXIT
8.4.6 Chamber Temperature Probe Failure	Occurs if chamber temperature reading is outside the normal range.	**Screen with Operator Instructions** STATUS.. ALARM! CHAMBER TEMPERATURE PROBE FAILURE 211 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE SILENCE ALARM | STATUS PRINT | PAPER FEED | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: CHAMBER TEMP PROBE FAILURE 212 → RTD PROBE, RTD1, OUTPUT IS OUTSIDE NORMAL RANGE CAUSES AND CORRECTION: 1. LOOSE CONNECTION IN PROBE WIRING → REPAIR 2. PROBE FAILED → REPLACE → RECALIBRATE 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.4.7 Jacket Temperature Probe Failure	Occurs if jacket temperature reading is outside the normal range.	**Screen with Operator Instructions** STATUS.. ALARM! JACKET TEMPERATURE PROBE FAILURE 213 CHAMBER: 000.0 F 00 psig JACKET: 000.0 F STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP] **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: JACKET TEMP PROBE FAILURE 214 → RTD PROBE, RTD3, OUTPUT IS OUTSIDE NORMAL RANGE CAUSES AND CORRECTION: 1. LOOSE CONNECTION IN PROBE WIRING → REPAIR 2. PROBE FAILED → REPLACE → RECALIBRATE 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE [PAPER FEED] [EXIT]
8.4.8 Door Switch Failure	Occurs if door seal switch contact is made but door switch is still open.	**Screen with Operator Instructions** STATUS.. ALARM! DOOR SWITCH FAILURE (LS1) 237 CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE • EXHAUST CHAMBER TO ATMOSPHERIC PRESSURE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE [SILENCE ALARM] [STATUS PRINT] [PAPER FEED] [SERVICE HELP]

Alarm	Description	Screen with Service Instructions
Door Switch Failure (Continued)		STATUS.. SERVICE INFORMATION: DOOR SWITCH FAILURE 238 → DOOR SWITCH OPEN WHILE SEAL SWITCH CLOSED CAUSES AND CORRECTION: 1. DOOR SWITCH MALFUNCTION → CHECK LS1 CONNECTIONS → READJUST LS1 → REPAIR LS1 CLEAR ALARM | PAPER FEED | EXIT
8.4.9 Recorder Temperature Probe Failure	Occurs if the chamber recorder temperature is outside the normal range.	**Screen with Operator Instructions** STATUS.. ALARM! RECORDER TEMPERATURE PROBE FAILURE 271 CHAMBER: 000.0 F 00 psig RECORDER: 300.0 F OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE SILENCE ALARM | STATUS PRINT | PAPER FEED | SERVICE HELP **Screen with Service Instructions** STATUS.. SERVICE INFORMATION: RECORDER TEMP PROBE FAILURE 272 → RTD PROBE, RTD4, OUTPUT IS OUTSIDE NORMAL RANGE CAUSES AND CORRECTION: 1. LOOSE CONNECTION IN PROBE WIRING → REPAIR 2. PROBE FAILED → REPLACE → RECALIBRATE 3. CONTROL OUT OF CALIBRATION → RECALIBRATE (CONTACT QUALIFIED SERVICE PERSON) 4. MAIN CONTROL FAILURE → CHECK CONTROL BOARD POWER STATUS LEDs → REPLACE CONTROL BOARD → RECALIBRATE PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.4.10 Door A Lock Switch Malfunction	Occurs if door lock switch closes out of cycle.	STATUS.. ALARM! 288 DOOR A LOCK SWITCH MALFUNCTION CHAMBER: 000.0 F 00 psig STERILIZER WILL: • AUTOMATICALLY ABORT CYCLE OPERATOR INSTRUCTIONS: 1. SILENCE ALARM 2. CALL SERVICE SILENCE ALARM | STATUS PRINT | PAPER FEED | SERVICE HELP

Screen with Service Instructions

STATUS... SERVICE INFORMATION: 289
DOOR A LOCK SWITCH MALFUNCTION

→ DOOR LOCK SWITCH CLOSED OUT OF CYCLE

CAUSES AND CORRECTION:
1. DOOR LOCK CYLINDER DL-1(2) EXTENDED
   → CHECK FUNCTION OF DL-1(2)
   → CHECK THAT LS5(6) IS "OFF" WHEN DL-1(2) IS NOT EXTENDED
2. DOOR LOCK SWITCH MALFUNCTION
   → CHECK LS5(6) CONNECTIONS
   → READJUST LS5(6)
   → REPAIR LS5(6)

CLEAR ALARM | PAPER FEED | EXIT

Alarm	Description	Screen with Operator Instructions
8.4.11 Door A Switches Malfunction	Occurs if control senses door is in the open and closed position simultaneously.	**STATUS.. ALARM! 292** **DOOR A SWITCHES MALFUNCTION** **CHAMBER: 000.0 F 00 psig** **STERILIZER WILL:** **• AUTOMATICALLY ABORT CYCLE** **OPERATOR INSTRUCTIONS:** **1. SILENCE ALARM** **2. CALL SERVICE** **SILENCE ALARM** | **STATUS PRINT** | **PAPER FEED** | **SERVICE HELP**

Screen with Service Instructions

STATUS.. SERVICE INFORMATION: 293

→ DOOR A SWITCHES MALFUNCTION
DOOR CANNOT BE IN THE OPEN AND CLOSED POSITION AT THE SAME TIME

CAUSES AND CORRECTION:
1. BOTH SWITCHES ARE CLOSED
→ CHECK LS1(LS3) FOR DOOR A OR LS2 (LS4) FOR DOOR B
→ READJUST DOOR SWITCHES
→ REPAIR DOOR SWITCHES

CLEAR ALARM | **PAPER FEED** | **EXIT**

Alarm	Description	Screen with Operator Instructions
8.4.12 Board Overtemp Failure	Occurs if the temperature of the main control circuit board exceeds acceptable environmental conditions.	**STATUS.. ALARM! 280** **BOARD OVERTEMP FAILURE** **CHAMBER: 300.0 F 00 psig** **STERILIZER WILL:** **• AUTOMATICALLY ABORT CYCLE** **OPERATOR INSTRUCTIONS:** **1. SILENCE ALARM** **2. CALL SERVICE** **SILENCE ALARM** | **STATUS PRINT** | **PAPER FEED**

9.1 General

WARNING – BURN HAZARD: Allow sterilizer and accessories to cool to room temperature before performing any cleaning or maintenance procedures.

WARNING – ELECTRIC SHOCK HAZARD: Disconnect all utilities to sterilizer before servicing. See Section 1 for expanded warning.

The material in this section is provided to allow for servicing components of the sterilizer most likely to need attention. These procedures are more advanced than cleaning and replacing expendables (such as printer paper and door seals). These procedures should always be performed by an experienced, trained service technician.

9.2 Air Filter Replacement

The purpose of the bacterial air filter is to filter air entering the sterilization chamber. The chamber is exposed to contamination whenever the filter or the air lines below the filter are opened. Keep these components as clean as possible when servicing. The bacterial air filter contains a replaceable filter cartridge; refer to **Table 7-1. Preventative Maintenance Schedule** for frequency.

1. Remove the old filter element and discard.
2. Insert the new filter, P101006-172.

9.3 Clean Strainers

WARNING – BURN HAZARD: Failure to shut off the steam supply when cleaning or replacing strainers can result in serious injury.

The strainers should be opened for cleaning after initial start-up and at least twice a year thereafter (refer to **Table 7-1. Preventative Maintenance Schedule**). Accumulation of sediment and rust will reduce pressure and flow. In extreme conditions, complete blockage may occur.

- **Disassembly**

  Shut off supply and then vent pressure in line by running a short sterilizer cycle. Abort the cycle when no pressure is present in the steam or water lines.

  1. Assure water and steam lines are still shut off.
  2. Remove hex plug and gasket.
  3. Pull out strainer screen from body.
  4. Scrape and polish all rust and residue from strainer screen and body. Use a wire brush or steel wool. Be sure that all perforations are clear. Replace screen if damaged, rusted or corroded.

- **Reassembly**

  1. Insert screen into strainer body. Ensure that no dirt or other particles remain in strainer body.
  2. Replace and tighten hex plug. Use a new gasket if necessary.
  3. Make certain that all pipe connections are tight after assembly.

9.4 Door Seal Replacement Procedure

WARNING – BURN HAZARD: Allow sterilizer to cool to room temperature before performing any cleaning or maintenance procedures.

This procedure should be performed by a qualified service technician. If door seal requires replacement, perform the following:

1. Allow sterilizer chamber and end frame to cool to room temperature.
2. Open sterilizer door.
3. Use flat tool with rounded edges (such as a non-serrated table knife) to pry and twist one section of the seal partially from the groove. Refer to Figure 9-1.
4. Grasp the raised section of the seal and pull the remainder from the end frame groove.
5. Examine the end frame groove for debris or residue. Clean if necessary.
6. Install new seal as follows:

NOTE: Ensure that lot data molded into rear of seal (refer to Figure 9-2) is at the bottom of the groove.

- **Do not** use a sharp instrument to install the seal.
- **Do not** stretch the seal.

a. Align right and left reference indicators with drill point reference marks in seal groove, align top and bottom indicators with the drill point reference marks in seal groove.

NOTE: Reference indicators are located inside the rear groove of door seal, at the middle of each side (refer to Figure 9-2).

b. Press seal in at each reference point with fingertips.

c. Press seal in at each corner with fingertips.

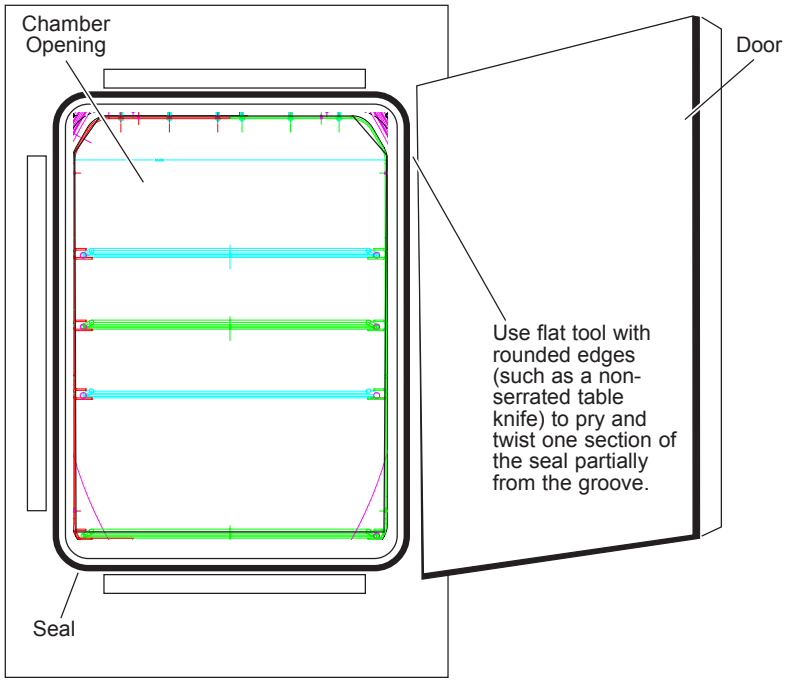
d. Press remainder of the seal into end frame groove.

7. Test installation.

a. Attempt to close the door. If the door sticks or will not fully close at any point in its travel, check to make sure the seal has been fully pressed into the groove.

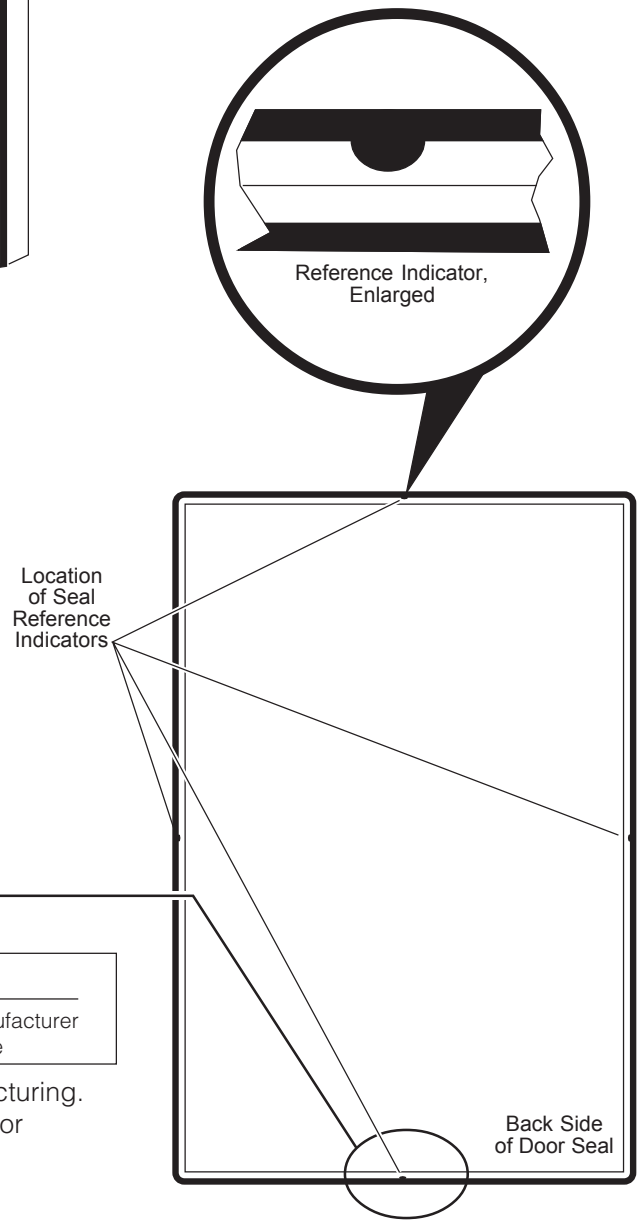
b. Run a shortened test cycle to determine if the door seals adequately. If steam leaks from around the door or the seal, abort the cycle and examine the seal to ensure it has been properly seated in the end frame groove. Once re-seated, run another test cycle. If the door fails to seal following the second test, another problem may exist. Contact your supervisor before using the sterilizer further.

At the end of the cycle, ensure seal has retracted fully into the groove.



Hinged Door Model Shown

Figure 9-1. Remove Door Seal



The following lot data is molded into the back side of the seal:

P-129373-376	ABCDEFHGIJKLMNOP	1234	02	P
Part Number	Lot Index	Cure Quarter	Year	Manufacturer Code

The lot index and cure quarter are struck off during manufacturing. The first characters in sequence *not struck* are those used for identification. For example:

~~AB~~CDEFHGIJKLMNOP ~~12~~34 02 P

The cure date is: 3rd Quarter, 2002. The lot is: 02C.

Figure 9-2. Location of Seal Lot Data and Reference Indicators

9.5 Steam Trap Replacement

WARNING – BURN HAZARD: Allow sterilizer to cool to room temperature before performing any cleaning.

WARNING – BURN HAZARD: Jacket pressure must be at 0 psig before beginning work on the steam trap.

CAUTION: Allow thermostatic traps to cool down to room temperature before removing cover. Since there is nothing to limit expansion, the bellows may rupture or fatigue if trap is opened while hot.

Refer to Figure 9-3.

- **Disassembly**

1. Using a suitable wrench, unscrew and remove the cap and bellows assembly.
2. Remove seat from body using a hex socket wrench.
3. Wipe out bowl taking care that loose material does not enter the piping.

- **Reassembly**

1. Screw new seat in firmly. (Use a socket head wrench to tighten.)

NOTE: Seat and bellows are a lapped pair.

2. Install new bellows.
3. Replace cap and attached bellows assembly, using a new gasket.
4. Check for leaks.

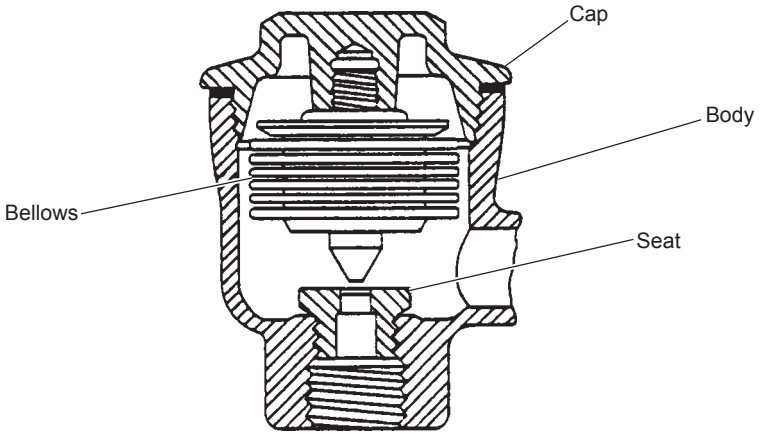


Figure 9-3. Steam Trap

9.6 Clean or Replace Piping Check Valves

Repair of check valve is limited to cleaning of valve seats when foreign matter causes improper operation. When a valve becomes defective, the entire valve must be replaced, unless the check valve has a field repair kit. Kit consists of new seals and springs. Refer to **Table 9-1, Replacement Parts,** for correct check valve part number.

9.7 Rebuild Solenoid Valves

Refer to Figure 9-4.

Solenoid valves can be rebuilt following the instructions included in the repair kit for the specific valve. Refer to **Table 9-1, Replacement Parts,** for correct kit number.

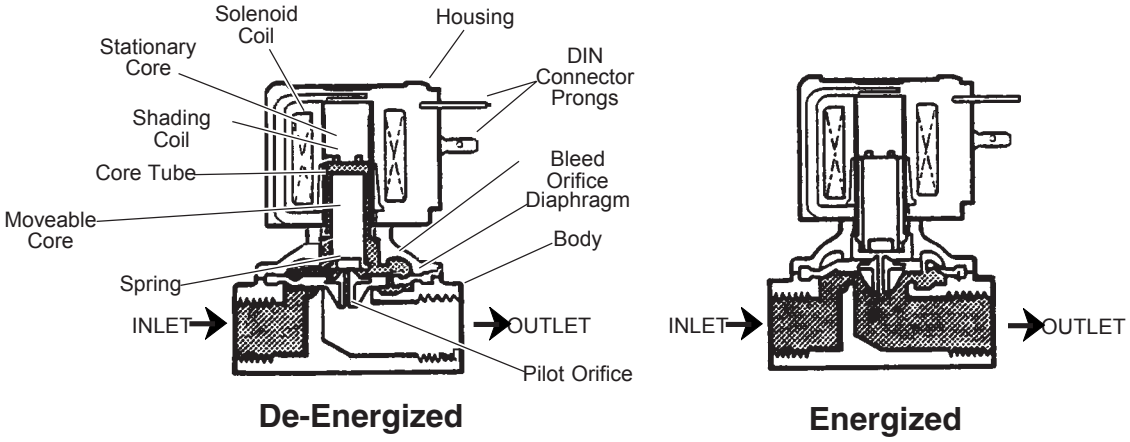


Figure 9-4. Internal Pilot-Operated Solenoid Valve.

9.8 Safety Valve Test

WARNING – BURN HAZARD: Proper testing of the safety valve requires the valve to be operated under pressure. Exhaust from the safety valve is hot and can cause burns. Proper safety attire (gloves, eye protection, insulated overall) as designated by OSHA, is required. Testing is to be performed by qualified service personnel only.

CAUTION: Actuation at less than 75% of rated pressure can allow debris to contaminate the seat and cause the safety valve to leak. A leaking safety valve must be replaced.

The safety valves are to be tested periodically (refer to **Table 7-1. Preventive Maintenance Schedule** at the beginning of *SECTION 7, ROUTINE MAINTENANCE*).

- Prevent damage during testing by ensuring that at least 75% of the rated pressure is in the chamber. Check current pressure level by observing chamber pressure gauge.
- Open the try lever and hold the valve open for one to two seconds.
- Allow the try lever to snap shut.

Any adjustments to the safety relief valve should be performed by a qualified service technician. Improper adjustments to this valve may result in inadequate sterilizer operation.

9.9 Recommended Spare Parts

To order replacement parts and/or supply products, proceed as follows:

1. Include the description and part/order number as listed in **Table 9-1, Replacement Parts**.
2. Include the model and serial numbers of your sterilizer on your order.
3. Send your order directly to the sales and service center serving your area.

Contact your sales representative for recommendations on cleaning products, biological indicators, or parts that are not listed in **Table 9-1, Replacement Parts**.

NOTE: Use only STERIS authorized parts on this equipment. Use of unauthorized parts will void the warranty.

Table 9-1. Replacement Parts
Amsco® Century™ Medium Steam Sterilizer 26 x 37.5" (660 x 950 mm)

Schematic Designation	Description	Part Number
CS1	SWITCH, Level, Chamber Flooded	093927-069
CK1	CHECK VALVE, Filtered Air	056402-067
	• KIT, Repair, CK1	764331-561
CK2	CHECK VALVE, Anti-cavitation	083521-001
CK3	CHECK VALVE, Jacket Steam Trap	010278-091
CK4	CHECK VALVE, Constant Steam Bleed	150829-501
	• KIT, Repair	764079-776
CK8	CHECK VALVE, Chamber Drain	056402-068
	• KIT, Repair, CK8	764331-562
DL1	LOCK, Door (OE, Hinged Door Only)	093911-202
DL2	LOCK, Door (NOE, Hinged Door Only)	093911-202
DS1	SEAL, Door (OE)	129373-376
DS2	SEAL, Door (NOE)	129373-376
F1	FILTER, Chamber Air	101006-172
F2	DIFFUSER, Steam	129373-528
FC1	CONTROL, Water Flow, Vacuum Pump	764328-968
FC2	VALVE, Needle, 1/8" PTF	083630-001
FC3	ORIFICE, Door Seal Exhaust (OE)	129376-082
FC4	ORIFICE, Door Seal Exhaust (NOE)	129376-082
HX1	HEAT EXCHANGER	136816-022
MV1	VALVE, Manual, Water Supply	093918-066
MV2	VALVE, Manual, Steam Supply	093921-265
MV3	VALVE, Manual, Emergency Exhaust, Chamber	093918-212
MV4	VALVE, Manual, Emergency Exhaust, Door Seal	093918-212
PG1	GAUGE, Chamber Pressure	007872-051
PG2	GAUGE, Jacket Pressure	007871-051
PR1	REGULATOR, Steam Pressure	136816-215
	• KIT, Repair	754359-003
PS1	SWITCH, Pressure, Door Seal (OE)	150829-896
PS2	SWITCH, Pressure, Door Seal (NOE)	150829-896
PT1	TRANSDUCER, Chamber Pressure	136816-078
RTD1, 4	RTD, Chamber, Recorder, Dual	093922-107
RTD2	RTD, Waste Water Temperature	093911-351
RTD3	RTD, Jacket Temperature	093911-351
RV1	SAFETY VALVE, Jacket	093921-266
S1 (NO)	SOLENOID VALVE, Filtered Air	093911-329
	• KIT, Repair	764324-895
	• COIL	764323-741
S2 (NC)	SOLENOID VALVE, Steam to Chamber	093911-331
	• KIT, Repair	764317-688
	• COIL	764323-941
S3 (NC)	SOLENOID VALVE, Fast Exhaust	093911-327
	• KIT, Repair	764071-001
	• COIL	764324-600
S4 (NC)	SOLENOID VALVE, Exhaust Cooling	093911-328
	• KIT, Repair	764072-001
	• COIL	764323-940
S7 (NC)	SOLENOID VALVE, Vacuum Water	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S9 (NC)	SOLENOID VALVE, Steam-to-Jacket	093911-331
	• KIT, Repair	764317-688
	• COIL	764323-941
S35 (NC)	SOLENOID VALVE, Steam-to-Seal (OE)	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S36 (NC)	SOLENOID VALVE, Steam-to-Seal (NOE)	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S37 (NC)	SOLENOID VALVE, Seal Retraction (OE)	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S38 (NC)	SOLENOID VALVE, Seal Retraction (NOE)	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S40 (NC)	SOLENOID VALVE, Chamber Constant Bleed	093910-478
	• KIT, Repair	764076-001
	• COIL	764323-942
S43 (NC)	SOLENOID VALVE, Vacuum Pump Drain	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
S46 (NC)	SOLENOID VALVE, Waste Cooling Water	093910-479
	• KIT, Repair	764076-001
	• COIL	764323-942
SB1	BAFFLE, Chamber Steam (Single Door)	146660-550
SB1	BAFFLE, Chamber Steam (Double Door)	146660-497
ST1	STRAINER, Water	047708-091
ST2	STRAINER, Steam	093921-290
ST3	STRAINER, Jacket	150828-459
ST4	STRAINER, Chamber Drain	048733-042
TR1	STEAM TRAP, Chamber Drain	129222-001
	• KIT, Repair	764080-001
TR2	STEAM TRAP, Jacket	129222-001
	• KIT, Repair	764080-001
TR3	STEAM TRAP, Steam Supply	041067-091
VP1	VACUUM PUMP	136816-034
	CONTROL DISPLAY	
	• MODULE, Color LCD[1]	146665-386
	• PC BOARD, Color LCD Interface[1]	146665-376
	• POWER SUPPLY, Color LCD[1]	136812-930
	• SPEAKER ASSEMBLY[1]	093922-916
	• MOTOR, Take Up, Color LCD[1]	136812-931
	• MODULE, Display (Mono)[2]	136809-735
	• PC BOARD, Interface[2]	141215-216
	• PC BOARD, Printer[2]	146656-182
	• SCREEN, Touch[2]	136809-701
	• MOTOR, Take Up[2]	093918-014
	• SPOOL, Take Up	093918-058
	• PRINTER	093918-051
	• RIBBON, Printer (Pkg of 2)	150828-440
	• PAPER (Box of 3)	129362-819
	• SPEAKER	092918-022
	• POWER SUPPLY[2]	356256-782
	CONTROL BOX	
	• PC BOARD, CPU[3]	141215-202
	• PC BOARD, Input/Output #1	146659-066
	• PC BOARD, Input/Output #2	146659-008
	• POWER SUPPLY	136810-006
	• SWITCH, Rocker	093911-576
	• FUSE, 5A (Box of 5)	764317-463
	RELAY, Solid-State, Motor Starter	093921-377
	CURRENT BREAKER, Motor Starter	093927-040
	DOOR DRIVE (Sliding Door Units Only)	
	• MOTOR	146660-338
	• CABLE	093921-244
	• SWITCH, Proximity	093909-954

[1] *Replacement part for color LCD display control, only.*

[2] *Replacement part for monochrome display control, only.*

[3] *Unprogrammed PC board, see Maintenance Manual (P764330-117) for instructions.*

Guide to Abbreviations on Pages 9-6 and 9-7 :

OE = Operating End

NOE = Non-operating End

RTD = Resistive Thermal Detector

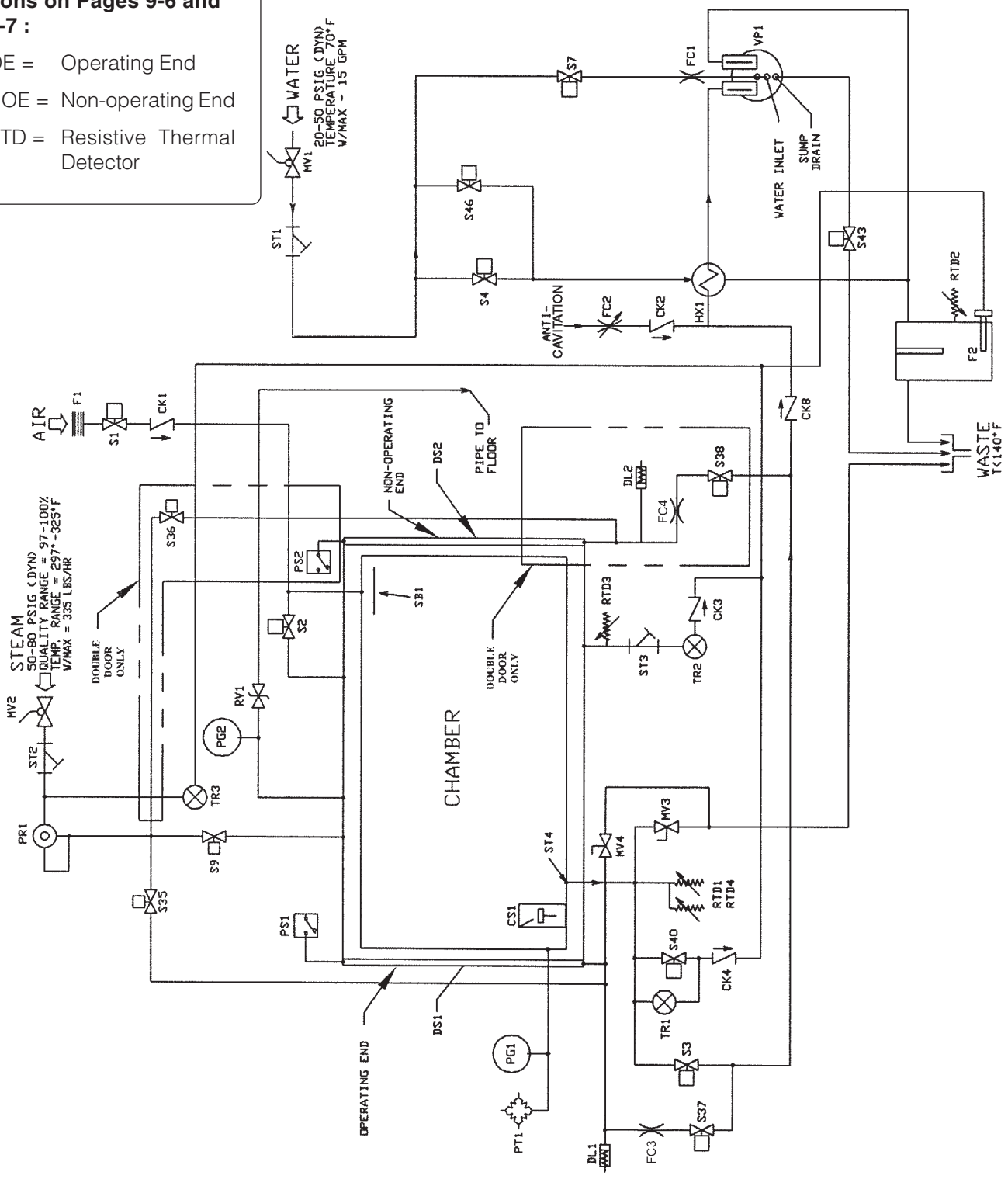


Figure 9-5. Piping Schematic (Parts Reference)

9.10 Waste Products Disposal

The following are waste materials associated with the sterilizer. When disposing of waste materials, be sure to do so in compliance with federal, state, and local regulations.

- Printer paper – recyclable.
- Printer ribbon – not recyclable.
- Water filters – not recyclable.
- Waste water – 57 L/min (15 gal/min).
- Entire sterilizer (end-of-life) – Contact STERIS for disposal or recycling recommendations.