

# Operator's Manual

**MAGNA-CLAVE<sup>®</sup>**

PELTON & CRANE

A Siemens Company

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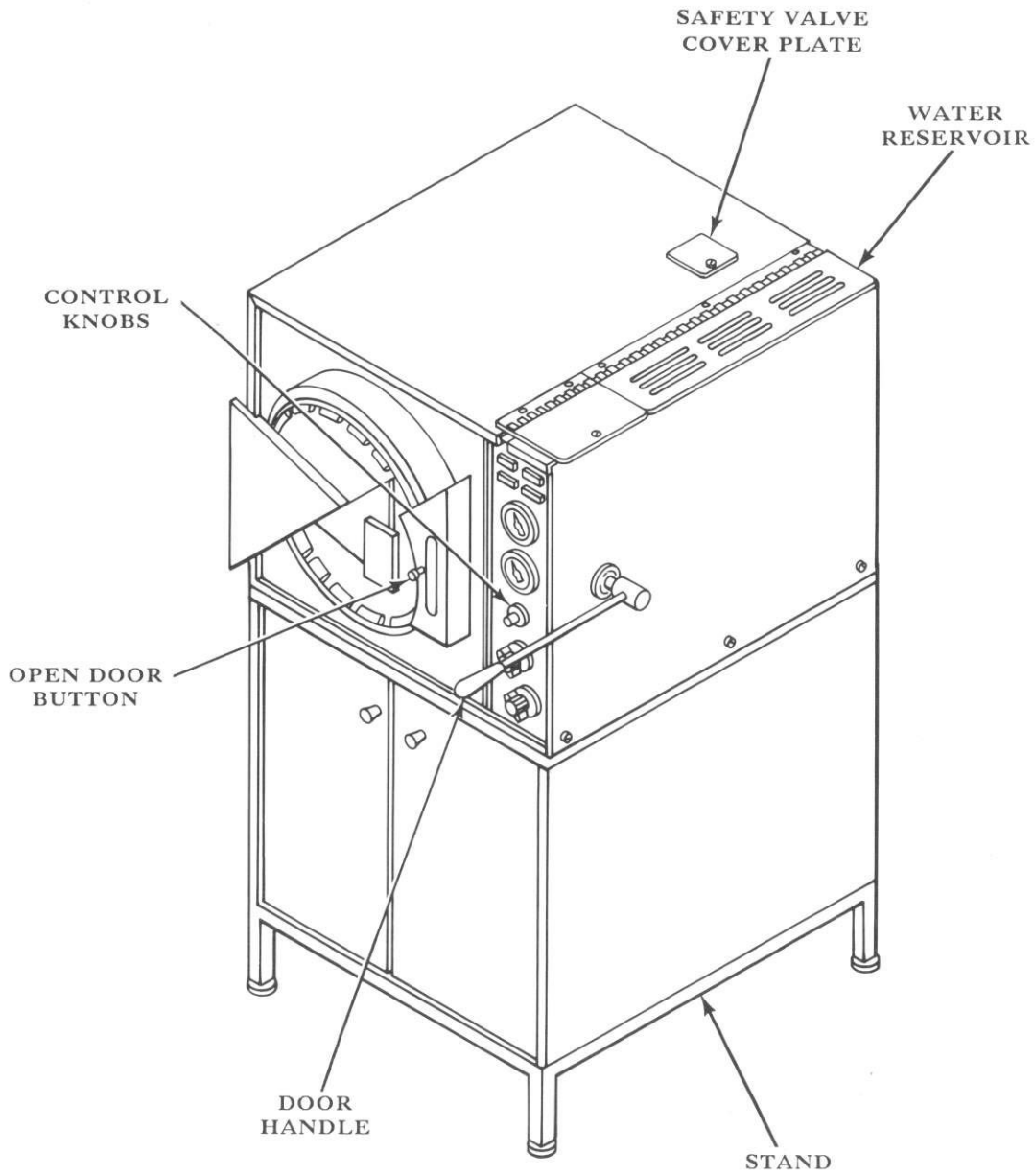
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**VISUAL INDEX**

## SECTION 1 FAMILIARIZATION

### I. SAFETY FEATURES

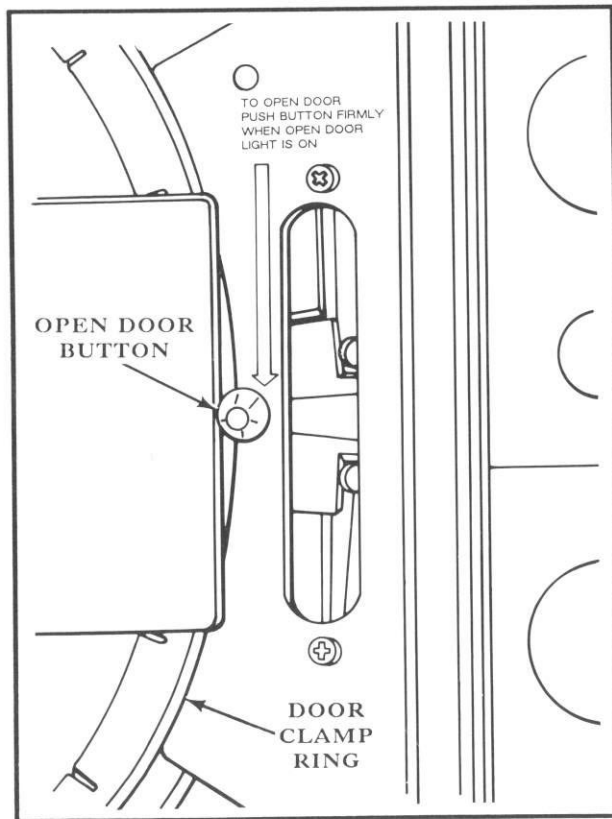
The Magna-Clave design offers several safety features for your protection.

#### A. Door Clamp Ring

A patented door clamp ring provides maximum safety by locking the **entire** rim of door. When activated by the door handle, the door clamp ring expands in diameter, allowing the door to open.

#### B. Open Door Button

The open door button energizes the door interlock solenoid. It must be depressed before moving the door handle up into the open position. The button is operative only when the **Open Door** light is illuminated.



#### C. Door Handle

When door handle is in down position, the door is locked and the rim is completely sealed. When door handle is in up position, the door clamp ring is expanded. To open

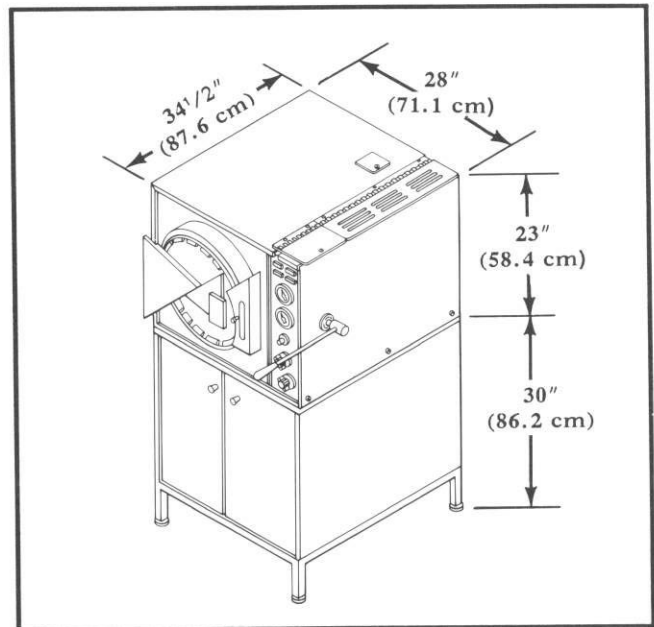
door, move door handle to upward position by the following method:

- Ensure that **Power On** light is illuminated
- **Open Door** light must be illuminated
- Depress **Open Door** button

**WARNING:** Do not attempt to move door handle upward until:

- **Open Door** light is illuminated
- **Pressure gauge** indicates "0"
- **Function** is in Vent or Fill position

### II. PHYSICAL CHARACTERISTICS



#### A. Exterior

The overall dimensions are 28" (71.1 cm) wide X 34 1/2" (87.6 cm) deep X 53" (134.6 cm) high (with stand), 23" (58.4 cm) high (without stand).

#### B. Interior

The overall chamber shall measure 30" (76.2 cm) deep X 16" (40.6 cm) diameter.

#### C. Installation Requirements

A space 46" (116.8 cm) wide X 54 1/2" (138.4 cm) deep X 65" (165.1 cm) high (with stand), 35" (88.9 cm) high (without stand) should be provided to properly operate and maintain the sterilizer.

### III. ELECTRICAL REQUIREMENTS

The Magna-Clave requires 5000 watts at either 208 volts or 220-240 volts, 50-60 cycles, single phase. Line voltage must be specified when ordering. An outlet box with conduit knockouts, grounding screw and a cover is provided on the rear of the sterilizer. This outlet box is used for connecting a power line to the Magna-Clave.

### IV. CONTROLS AND INDICATORS

#### A. Indicator Lights

1. **Power On** - The **Power On** light indicates that electrical power is being supplied to the autoclave. It is illuminated when the **Function** control is in the **Fill**, **Sterilize** or **Vent** position. When the **Power On** light is illuminated, the wall heaters of the autoclave are energized to maintain a warm, standby condition.
2. **Heat On** - The **Heat On** light indicates that electrical power is being supplied to the main heating elements which generate steam inside the boiler. When the **Function** control is in the **Sterilize** position and the door handle in the down position (door locked), the **Heat On** light will be illuminated and the main heating elements are energized. The light remains illuminated until the steam temperature inside the chamber reaches the setting on the **Temperature** control. The main heating elements will cycle off-and-on to maintain the desired temperature.
3. **Sterile** - The **Sterile** light is illuminated when: the **Function** control is in the **Sterile** position, the desired temperature is reached and the **Time** control indicates "0." At the beginning of the cycle, the **Time** control should be set at the desired time for sterilization. When the **Time** control turns to "0," the **Sterile** light illuminates and the \*buzzer or chime sounds to indicate the end of the sterilization cycle.

\*Determined by manufacturing date of unit.

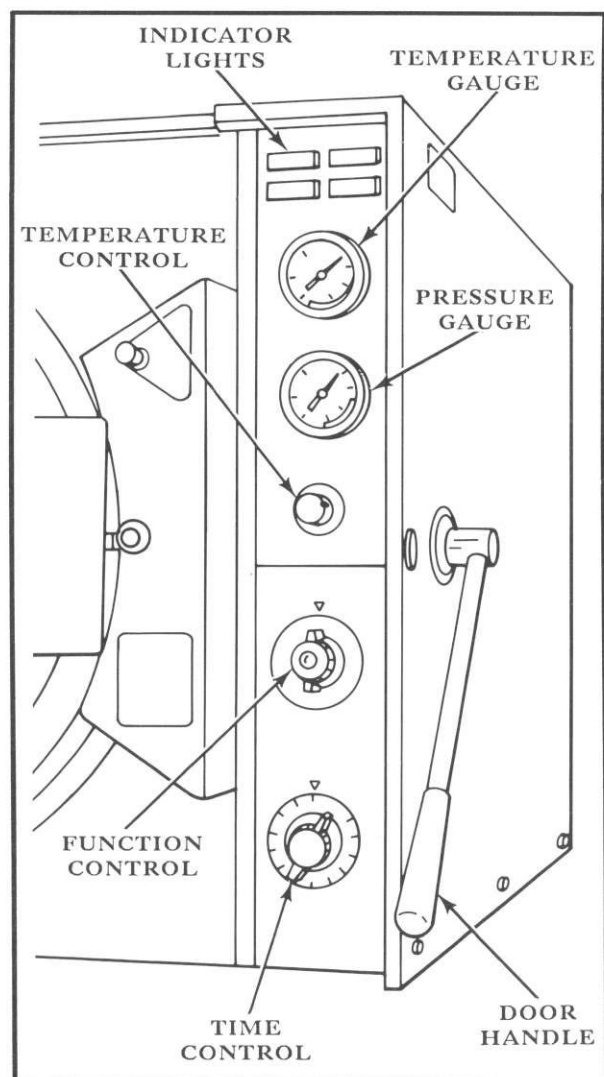
4. **Open Door** - The **Open Door** light is illuminated when the **Function** control is in the **Vent** or **Fill** position and pressure in the chamber is low enough to allow the door to be safely opened.

**CAUTION:** The door cannot be opened and no attempt should be made to operate the door handle until the **Open Door** button is depressed.

#### B. Gauges

1. **Temperature Gauge** - The **Temperature** gauge measures the steam temperature in the discharge line from the chamber. It is marked with a green area from 250°F to 270°F to indicate normal sterilizing temperatures.
2. **Pressure Gauge** - The **Pressure** gauge measures pressure within the chamber. It is marked with a green area between 15 and 31 PSI (pounds per square inch).

#### C. Control Knobs



1. **Temperature Control** – Temperature and pressure inside the chamber are controlled by the **Temperature** control. It may be set from approximately 240°F to 270°F. Markings on the control indicate approximate settings. For a more precise setting, refer to Section 3.

2. **Function Control** – All operations of the Magna-Clave are controlled by the **Function** control as follows:

a. **Power Off** – All power is turned off; door cannot be opened.

b. **Fill** – Water from reservoir is allowed to enter chamber; wall heating elements are energized.

c. **Sterilize** – Power is supplied to all heating elements as required; door cannot be opened.

d. **Vent** – Unused water and steam in chamber are returned to reservoir after sterilizing cycle is complete. The door can be opened when the pressure decreases to a safe level and the Open Door light is illuminated. The wall heaters remain energized. This reduces pressure build up time for successive sterilizing cycles and promotes drying of the sterilized material.

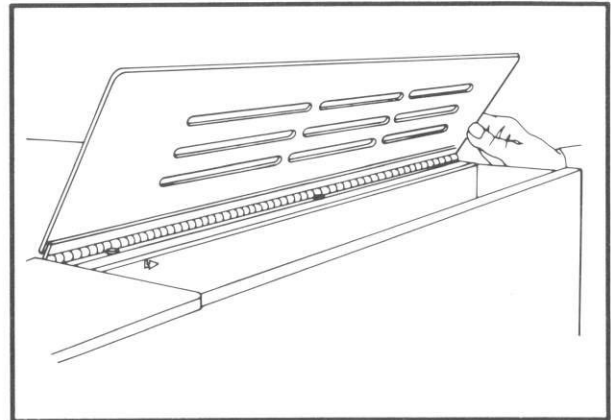
3. **Time Control** – The **Time** control is manually set at the beginning of each sterilizing cycle. Timing begins when the preset temperature is reached and time control counts down to “0.”

**NOTE:** Do not set the time control for an interval of less than five minutes.

#### D. Audible Signal

1. **Buzzer or Chime** – When the **Time** control returns to “0,” a buzzer or chime will sound to indicate the end of the cycle. The buzzer sounds continuously and the chime sounds every 10 to 20 seconds until the **Function** control is turned to **Vent**. The **Time** control must be set at the beginning of each sterilizing cycle. If it is not set, the buzzer or chime will indicate end of sterilizing cycle when the preset temperature is reached, and the sterilizing cycle will not be complete.

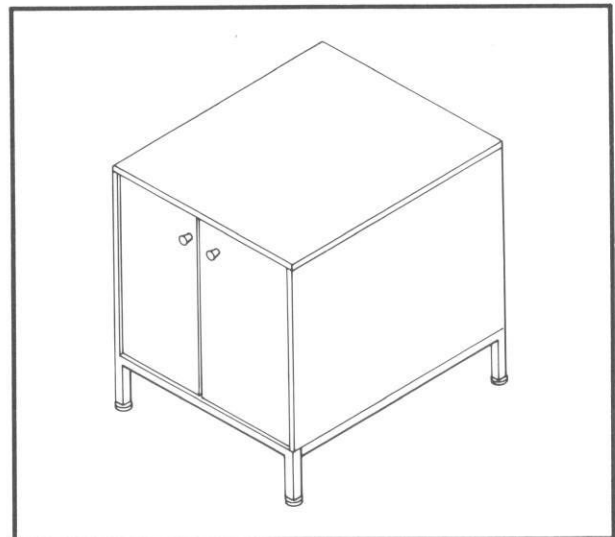
#### E. Water Reservoir



1. The water reservoir provides an ample water supply for cooling discharged steam and water. The reservoir should be filled with distilled or demineralized water to prevent corrosion. It should be filled to the line marked at the rear of the reservoir, and should never drop **more than** four inches below the line. A rubber drain hose attached to the brass fitting beneath the autoclave facilitates proper drainage and cleaning. For installation information, refer to YL2-094075, Installation of the Magna-Clave.

#### F. Stand

1. The Magna-Clave stand provides a convenient storage compartment to house trays or supplies.



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## SECTION 2 PREPARATION FOR STERILIZATION

### I. HANDLING AND CLEANING OF INSTRUMENTS

**NOTE:** Instruments must be thoroughly cleaned prior to placement in the sterilizer.

#### A. Handling

1. Wear heavy rubber gloves while handling instruments. Clean gloved hands with a germicidal cleaner (iodophore surgical scrub). Wash gloved hands well when instrument handling is complete.
2. Transport soiled instruments to cleanup area on a tray. Protect your hands from contact with soiled instruments to prevent any serious infection.
3. Sort out any nonsurgical devices or other instruments that cannot withstand immersion without rusting. Refer to Table 2-1.

Table 2-1 ITEMS RECOMMENDED FOR STEAM STERILIZATION

Straight stainless steel instruments. Surgical stainless steel hinged instruments. Air powered instruments made for autoclaving (e.g. handpieces). Heat resistant plastic items. Rubber gloves. Rubber tubing. Glass slabs, beakers and stones. Gauze. Liquids.
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**NOTE:** Check manufacturer's recommendations for individual items before autoclaving.

#### B. Cleaning

Items must be completely cleaned before sterilizing. Processing instruments with debris or blood contamination may result in staining and/or damage to instruments or sterilizer.

1. Rinse instruments with hard stream of water immediately after use to remove debris. Handle soiled instruments following procedure outlined in Section 2-I-A.
2. Wash instruments in an ultrasonic cleaner for five to 10 minutes immersed in a fresh solution of detergent and distilled or demineralized water or a germicide solution. Follow manufacturer's recommended procedures. Clean all instruments in an open position.

**NOTE:** For best results, use a detergent specifically designed for use in an ultrasonic cleaner with a neutral ph (7). (Healthsonics, Pleasanton, CA; L&R, Kearny, NJ, or comparable brand). A Germicide, 2% glutaraldehyde or equivalent may also be used. Be sure to follow manufacturer's instructions for mixing and use. Otherwise, unsatisfactory results and/or damage may occur. Discard and replace ultrasonic cleaning solution daily.

3. After cleaning, rinse instruments very thoroughly for 30 seconds in tap water. Then perform a final rinse with distilled or demineralized water after the 30 second rinse to remove impurities found in most tap water. Inspect instruments to ensure removal of all debris. Repeat cycle as necessary.

**NOTE:** To prevent staining, instruments should be rinsed with demineralized (distilled) water and dried. After rinsing in tap water in areas with hard water (water with a high mineral/salt content), dry the instruments. (Drying should not be a substitute for rinsing.) When autoclaving instruments which are not stainless steel, use a corrosion inhibitor predip for two or three minutes. (This may be 2% solution of sodium nitrite in distilled water.) Allow the predip to dry on the instruments without wiping.

4. Follow the recommendations by the instrument manufacturer on the use of lubricating products after instruments have been ultrasonically cleaned.



5. With the increasing concern for asepsis, offices are using more disinfectants and instrument soaks. If any of the disinfectants are introduced into the autoclave during the cycle (either directly or by incomplete rinsing after soaks), corrosion of the stainless steel chamber, instruments and trays or baskets may occur. There are several chemicals commonly used as disinfectants which may break down under temperature and pressure to cause corrosion to the stainless steel trays and instruments, even in a properly passivated 304 stainless steel chamber. These chemicals include:

- Any disinfectant containing Zephiran Chloride (Benzalkonium Chloride), a quaternary ammonium compound. (A number of practices still use quaternary ammonium compounds, although this is no longer recommended by professional organizations.)
- Any Amine based disinfectant containing quaternary amine hydrochlorides.
- Any disinfectants containing sulfite products.
- Any disinfectants containing phenolic products. Some disinfectants commonly used in practices containing phenols are:
- Any disinfectants containing active hydrogen halide group.
- Sporicidin®, Lysol®, and Omni II®.

## II. SPECIAL PREPARATION GUIDE FOR CARBON STEEL INSTRUMENTS

### A. Handling

1. Handle and thoroughly clean instruments as outlined above. (Refer to Section 2-I.)

### B. Cleaning

1. Prepare a 2% solution of sodium nitrite (one tablespoon per quart of water). Immerse instruments in the solution and allow them to remain for three minutes.

### C. Sterilization Preparation

1. Remove instruments and prepare for sterilization. (Refer to Section 2-III.) Do not rinse or wipe instruments prior to sterilization.

**NOTE:** Do not place carbon steel instruments directly on the Magna-Clave's

stainless steel tray. Before placing instruments on the tray, line the tray with a towel or paper wrap.

### D. Instrument Wrapping

1. Instruments which will be wrapped for sterilization should be packaged in a material which promotes drying.

**NOTE:** Instruments in packages may not dry well and may require use of an atmosphere reducer (Vapor-Phase, Lorvic Corporation, St. Louis, MO,) for best drying results.

## III. TRAY PREPARATION AND LOADING

### A. General guidelines for tray preparation:

- An internal process indicator strip should be included with each sterilizer load to verify gross heat penetration.

- A biological spore test indicator should be used weekly in a representative sterilizer load for sterilization assurance.

- Date packages and resterilize after one month, or according to packaging manufacturers' specifications.

- Sterilization indicators/monitors should be placed in the front bottom area of the sterilizer.

- **DO NOT** mix or cause contact of dissimilar metals (i.e. metals such as carbon steel and stainless steel) during sterilization or storage.

- Make sure that all instruments are sterilized in an open position. (Refer to AORN guidelines.)

- Place all sharps (scissors, knives, skin hooks) so they do not touch during autoclaving. Cotton or gauze may be used to isolate and protect the sharp edges and the smaller instruments.

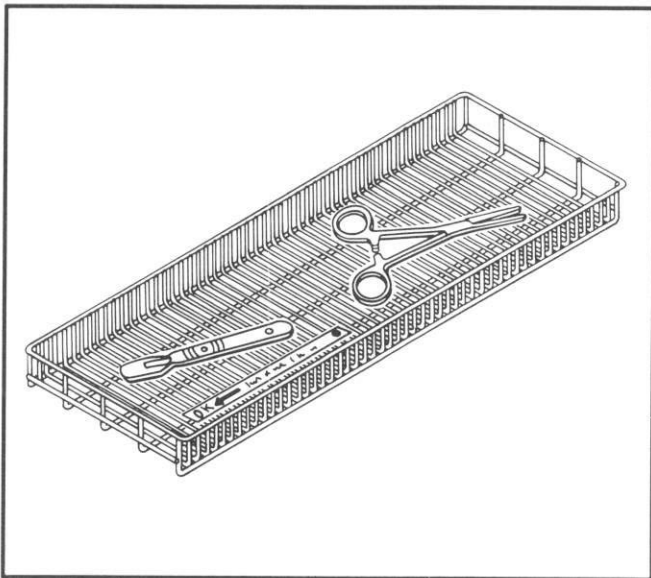
- Do not place metal instruments, other than stainless steel, directly on stainless steel autoclave trays. The trays should be lined with thin cloth or paper liners.

- Any item which might hold water should be placed so the water will drain out.

- Use small packs to separate larger ones.
- Never stack trays on top of one another. At least one inch should separate trays.
- Wrapped trays and packs must **not** touch the sides of the sterilizer.
- Do not overload trays. Overloading may cause sterilization failure.

**B. Unwrapped trays** are prepared for sterilization of nonsurgical instruments and cannisters to prevent transmitting infectious disease. Always include a process or spore test indicator with every sterilizer load.

### 1. Loose Instruments



- a. Distribute a single layer of instruments in the bottom of a perforated tray. Instruments made of metal other than stainless steel should not contact the stainless steel autoclave tray. A very thin liner of paper or cloth should be used for separation. Provide adequate space between instruments for steam circulation. Do not overload. Be sure to include a process or spore test indicator.
- b. Place tray on rack in sterilizer.

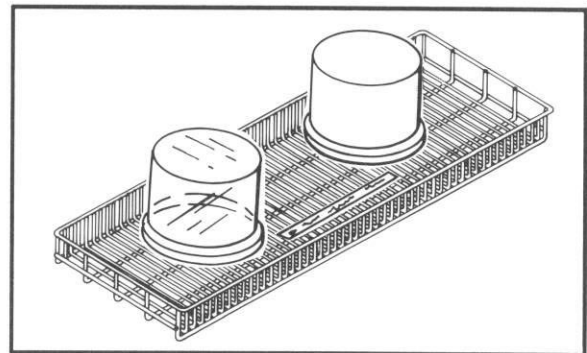
**NOTE:** If multiple layers of instruments are to be separated by fabric,

see instructions for preparing wrapped trays.

- c. Refer to Section 3 for operating instructions.

### 2. Open Metal or Glass Cannisters

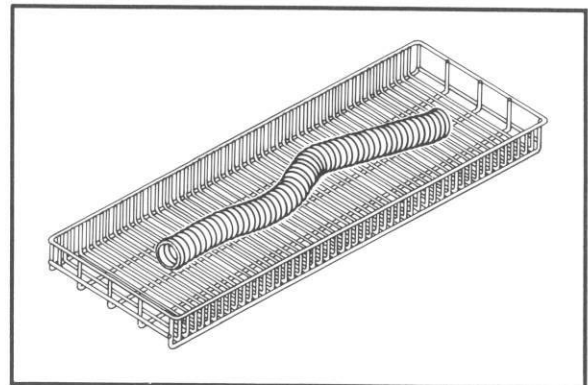
- a. Place open metal and glass cannisters on a perforated tray. Tilt cannisters down for adequate steam penetration. Be sure to include a process or spore test indicator.



- b. Place tray on rack in sterilizer. Do not overload or inadequate sterilization and drying may result.
- c. Make sure containers are placed so they will drain and dry adequately.
- d. See Section 3 for operating instructions.

### 3. Rubber Tubing

- a. Clean tubing thoroughly.



- b. Rinse with pyrogen free water and leave wet. Leave both ends open. Coil and wrap without kinks or sharp bends.
- c. Place tubing on an autoclave tray. Be sure to include a process or spore test indicator.
- d. Place tray on rack in sterilizer. **Do not** overload or inadequate sterilization and drying will result.

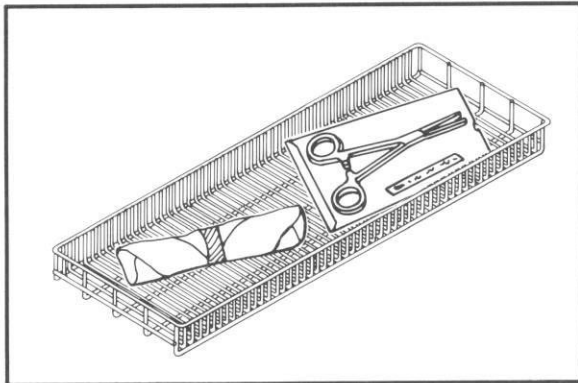
**CAUTION:** Tubing which will come in contact with a surgical wound should be prepared as outlined above, and wrapped to maintain sterility.

- e. Refer to Section 3 for operating instructions.

### C. Wrapped Trays and Instruments

There are several ways to prepare wrapped trays. Refer to Table 2-2 for acceptable wrapping materials.

#### 1. Individually wrapped instruments



- a. Individually wrap instruments, which have been cleaned according to Section 2-I, in autoclave bags or paper (3M, St. Paul, MN; Propper, Long Island City, NY). Do not tightly roll instruments in paper.
- b. Seal with autoclave tape or heat sealer (3M, St. Paul, MN; Propper, Long Island City, NY).

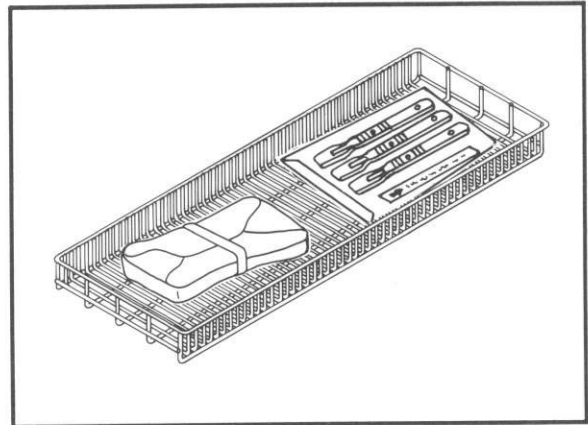
**CAUTION:** Do not use staples, pins or other devices which will puncture the packaging material. Otherwise, sterility may be compromised.

- c. Place individually wrapped instruments on perforated trays. Provide adequate space between instruments for steam circulation.

**CAUTION:** Do not overload trays or inadequate sterilization may result.

- d. Include a process or spore test indicator. Place the indicator inside an individually wrapped instrument which will be placed in the front of the bottom tray.
- e. Place trays on the rack in the sterilizer. Provide adequate space between trays to allow steam circulation.
- f. Refer to Section 3 for operating instructions.

#### 2. Wrapped Instruments



- a. Collect a group of similar instruments which have been cleaned according to Section 2-I.

or

Collect instruments used for a particular procedure (i.e. amalgam, exam, etc.) which have been cleaned according to Section 2-I. Do not mix dissimilar metals.

- b. Place instruments in autoclave bag (3M, St. Paul, MN; Propper, Long Island City, NY).

or

Loosely wrap instruments in two to four layers of muslin towels or autoclave paper (3M, St. Paul, MN; Propper, Long Island City, NY).

**CAUTION:** Do not wrap instruments too tightly. Inadequate sterilization may result from improper wrapping or placing too many instruments per package. (If a large number of instruments per package are desired, refer to Section 2-II-D for PACKS).

- c. Place a process or spore test indicator inside a representative bag.
- d. Seal with autoclave tape (3M, St. Paul, MN; Propper, Long Island City, NY,) or heat sealer.

**CAUTION:** Do not use staples, pins or other devices which will puncture the packaging material. Otherwise, sterility may be compromised.

- e. Place packages on perforated trays. Ensure adequate space between packages to allow steam circulation.

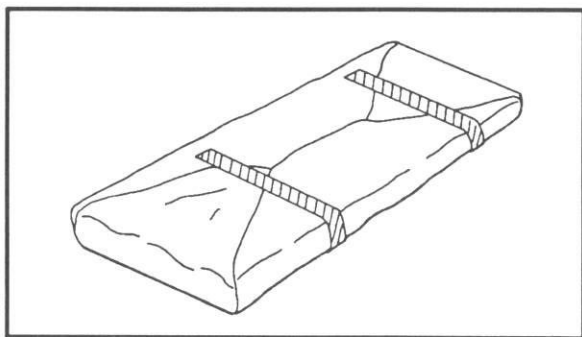
**NOTE:** Place the package containing the sterilization monitor in the front of the bottom tray.

- f. Load tray in the rack in the sterilizer. Ensure adequate spacing between trays to allow steam circulation.

**CAUTION:** Do not overload or inadequate sterilization may result.

- g. Refer to Section 3 for operating instructions.

### 3. Wrapped Trays



- a. Place instruments, cleaned according to Section 2-I, in a perforated tray. Allow adequate space between instruments for steam circulation.

- b. Place a process or spore test indicator in at least one tray to be cycled.
- c. Wrap the tray in two to four layers of towels or other wrapping material. (Refer to Table 2-2.) Close using autoclave tape.
- d. Place wrapped trays on the rack in the sterilizer. Ensure that the wrapping does not touch the sides of the chamber. Allow adequate space between trays for steam circulation.

**NOTE:** Place the tray containing the sterilization monitor in the bottom of the sterilizer.

**CAUTION:** Do not overload or inadequate sterilization may result.

- e. Refer to Section 3 for operating instructions.

### D. Packs

Packs are for sterilizing surgical instruments, gloves and textiles.

#### 1. Instruments and textiles

- a. Clean instruments according to Section 2-I. Textiles should be laundered prior to sterilization.

**NOTE:** Do not use high chlorine or phosphate content detergents or chlorine bleach in laundering items prior to sterilization. Staining of the autoclave and instruments or more severe damage may result. The use of chlorides may also result in cracks in the chamber.

- b. Loosely package instruments with not more than 10 per pack. Instruments of the same type which are nested should be separated by a layer of absorbent towels and placed so that water will run out. Loosely roll or fold textiles.

**CAUTION:** Density should not exceed 1/2 the capacity of the pack and the packs should not exceed 1/2 the capacity of the tray. Otherwise, inadequate sterilization could result.

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or

Wrap properly cleaned articles in two to four layers of muslin towels or other packaging material. (Refer to Table 2-2.)

- c. Place a process or spore test indicator inside a representative pack.
- d. Seal with autoclave tape or heat sealer (3M, St. Paul, MN; Proper, Long Island City, NY).

**CAUTION:** Do not use staples, pins or other devices that could puncture packaging material. Otherwise, sterility could be compromised.

- e. Place packs on perforated trays. Leave adequate space between packs to allow steam to circulate. Load packs upright, side-by-side on the tray. Do not stack.

**CAUTION:** Adequate drying will not occur unless space is left between packs. Metal and glass containers should not be used to separate packs as these will inhibit drying. Packs should not exceed 1/2 the capacity of the tray. Otherwise, sterilization could be compromised.

- f. Load trays onto the racks in the sterilizer. Ensure that packs do not touch the sides of the chamber. Allow adequate space between trays for steam circulation. If packs are large, some trays may be omitted to allow more clearance.

**CAUTION:** Do not overload or inadequate sterilization may result.

- g. Place pack containing sterilization monitor in the bottom front of the sterilizer.

- h. Refer to Section 3 for operating instructions.

## 2. Surgical gloves

**NOTE:** Disposable gloves should not be sterilized.

- a. Clean and dry gloves.
- b. Place a square of muslin or other absorbent towel into the glove up to the finger.
- c. Place a strip of muslin or other absorbent towel around the cuff and fold it back.
- d. Place a process or spore test indicator in one glove. Wrap gloves in muslin or other packaging material. (Refer to Table 2-2.)
- e. Place wrapped packs of gloves on end in a perforated tray. Leave space between packs to allow steam to circulate.
- f. Load trays onto rack in the sterilizer. Leave adequate space between trays for steam circulation. Ensure that packs do not touch sides of chamber.

**CAUTION:** Do not overload. Inadequate sterilization may result.

- g. Place pack with sterilization monitor in the front bottom tray.
- h. Refer to Section 3 for operating instructions.

## IV. LIQUIDS PREPARATION

- A. Place liquids in a heat proof glass container, filled 2/3 full.
  - B. Cover container loosely using a paper or metal cap. Do not seal container.
  - C. Place container on a perforated tray. Include a process or spore test indicator. Load onto the rack in the sterilizer. (Refer to Section 3 for operating instructions.)
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Table 2-2 WRAPPING MATERIALS FOR STEAM STERILIZATION

SUITABLE	UNSUITABLE
Muslin 2 (layers) Nylon bagging material Kraft paper Commercial autoclave paper (must be as permeable as muslin) Plastic and paper bags (must be permeable) Cloth or paper covered trays	Canvas Aluminum foil Steam impermeable plastics Sealed tubes, jars and cannisters Drums not recommended

Table 2-3 RECOMMENDED PERIODS OF EXPOSURE

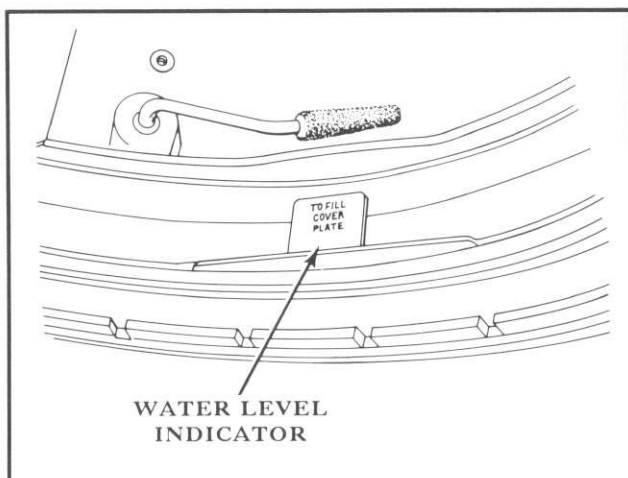
Material to be Sterilized vs. Time in Minutes		KPa	103	138	172
		PSI	15	20	25
		F°	250	260	267
		C°	121	127	131
Fabrics -	Loosely woven - Wrapped in muslin		30	20	-
Fabrics -	Tightly woven		40	30	-
Instruments -	In tray - Muslin cover		15	10	3
Instruments -	Individually wrapped in muslin		30	15	10
Syringes and Needles			15	10	7
Drums -	Loosely woven contents		30	20	-
Drums -	Tightly woven contents		40	30	-
Utensils -	Loosely woven contents		30	20	10
Rubber Gloves -	In muslin packs		15	-	-
Rubber Covers -	In muslin packs		15	-	-
Brushes and Miscellaneous Articles					
Wrapped -			15	-	-
Solutions -	1000 cc flasks		30	25	-

## SECTION 3 OPERATION

**WARNING:** Do not attempt to bypass any of the safety interlock systems described below. Failure to do so could result in personal injury.

### I. GENERAL

- A. When the **Function** control is in the **Power Off** position, all electrical power is off and the door cannot be operated. An additional safety interlock is included to prevent the door from being opened when there is an unsafe level of pressure in the chamber. Another interlock prevents the main heaters from becoming energized to generate steam unless the door is fully locked. The **Open Door** light will illuminate when it is safe to open the autoclave door. When the **Function** control is in the **Fill** position, water flows from the reservoir into the chamber. When the water level indicator in the chamber is covered, the **Function** control should be turned to **Sterilize** to stop the flow of water. To generate steam, the door must be closed and locked. The **Time** control should be set at the beginning of the sterilizing cycle. Timing will begin when the preset temperature has been reached, and will continue until the **Time** control returns to "0."



- B. When the sterilizing procedure is complete, the **Sterile** light will illuminate and the chime or buzzer will sound. The preset temperature will be maintained, even though the **Time** control has completed its cycle. Turning the **Function** control to **Vent** will cut off the

**Sterile** light and the chime or buzzer. Steam and unused water will then be returned to the reservoir from the chamber and pressure inside the chamber will be reduced to near zero. When the chamber pressure reaches a safe level, the **Open Door** light will become illuminated.

**WARNING:** Never attempt to open door unless open door light is illuminated and pressure gauge indicates "0."

To aid in absorbing moisture, the door can now be slightly opened. The chamber heaters will remain energized. Leave materials inside the chamber until dry. Drying time is determined by the size of the material and manner in which it was packed. Drying times have not been established due to varying conditions. When the **Function** control is left in the **Vent** position, the Magna-Clave will remain in a warm, standby condition.

### II. OPERATING PROCEDURES FOR NORMAL STERILIZATION

**WARNING:** Burns and bodily injury can occur if a sterilizing cycle is interrupted or "aborted" in the following manner:

- Autoclave has been in **Sterilize** mode for five minutes or more after a cold start.
- **Function** control is then turned to **Vent** and **Open Door** light is illuminated. If this situation develops, **DO NOT** open door even though **Open Door** light is illuminated. Wait ten minutes before attempting to open door.

#### A. Unlock door

Turn **Function** control to **Vent** or **Fill**. Depress and hold **Open Door** button on front of Magna-Clave and lift door locking handle on right side of unit.

#### B. Fill

Turn **Function** control to **Fill**. When water in chamber covers water level indicator, rotate **Function** control to **Sterilize**.

#### C. Load

Load chamber. Refer to Section 2-III.



#### D. Lock Door

Close door and push down the door locking handle on the right side of the Magna-Clave.

#### E. Set Time Control

Rotate **Time** control clockwise to desired sterilizing time. The **Time** control will start when the preset temperature is reached.

**NOTE:** If Time control is not set at the beginning of the sterilizing cycle, the chime or buzzer will sound and the Sterile light will illuminate as soon as the preset temperature is reached.

#### F. Set Temperature

Turn **Temperature** control to the desired temperature. When a more precise setting is desired, turn **Temperature** control fully clockwise. When temperature gauge reaches desired temperature, rotate **Temperature** control slowly counterclockwise until the **Heat-On** light goes off. Once the control is set, it is not necessary to move it unless a change in sterilizing temperature is desired.

#### G. Vent

After the chime or buzzer sounds and **Sterile** light illuminates, turn the **Function** control to **Vent**.

#### H. Unlock Door

After ensuring that the **Open Door** light is illuminated and that the pressure gauge indicates "0," lift door locking handle while depressing **Open Door** button on front of Magna-Clave.

- I. **Drying** After unlocking door, allow door to stand partially open with **Function** control still in the **Vent** position.

### III. OPERATING PROCEDURES FOR LIQUIDS STERILIZATION

**WARNING:** Burns and bodily injury can occur if a sterilizing cycle is interrupted or "aborted" in the following manner:

- Autoclave has been in **Sterilize** mode for five minutes or more after a cold start.
- **Function** control is then turned to **Vent** and **Open Door** light is illuminated. Wait 10 minutes before attempting to open door.

**NOTE:** Use only Pyrex® or stainless steel containers for liquids sterilization. Containers should only be covered with paper caps.

#### A. Preparation and Sterilization

1. To sterilize liquids, follow steps A-F, Section 3-II.

#### B. Vent

1. After the chime or buzzer sounds and **Sterile** light illuminates, turn the **Function** control **quickly past** the **Vent** position to **Off** position.

#### C. Cool Down

1. Allow autoclave to cool down until pressure gauge indicates "0" (approximately 25 minutes).

#### D. Unlock Door

1. After ensuring **Open Door** light is illuminated and pressure gauge indicates "0," lift door locking handle while depressing **Open Door** button on front of Magna-Clave.

#### E. Drying

1. After unlocking door, allow door to stand partially open with **Function** control still in the **Vent** position.

### IV. OPERATING GUIDELINES

- A. The Magna-Clave may be preheated by turning the **Function** control to **Vent** 30 minutes before the autoclave is needed. This will allow for a faster desired sterilizing temperature.
- B. Water should only be added to the reservoir when the **Function** control is in the **Vent** or **Power Off** position. Demineralized or distilled water must always be used to prevent corrosion. The minimum water level should always reach the level indicating mark on the back of reservoir.
- C. Do not attempt to turn the **Function** control from **Sterilize** to **Fill** or from **Vent** to **Sterilize**. There are mechanical stops which prevent the **Function** control from being turned in this manner.
- D. Improper sterilization may result if chamber is overloaded or too crowded.

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E. The **Time** control must be set at the beginning of each cycle to the desired sterilizing time. If the **Time** control is not properly set, the buzzer or chime will sound and the **Sterile** light will illuminate. This indicates the

end of the sterilizing cycle, and will not allow completion of the cycle.

**NOTE:** Do not set the time control for an interval of less than five minutes.

## SECTION 4 CARE AND MAINTENANCE

### I. PREVENTIVE MAINTENANCE SCHEDULE

CHECK	FREQUENCY	PROCEDURE	ACTION
Clean and inspect chamber	Weekly	12 ozs. Omni-Cleaner to 1 gallon distilled water on 20 minute cycle.	See Sections 4-II and 4-IV. Call authorized service representative if cracks or fissures are found. Do not operate unit.
Safety valve ring <b>WARNING: When ring is pulled on safety valve with unit under pressure, steam is discharged from the chamber at a high temperature. Keep clear of steam discharge path to avoid burns. Use of a hot pad or instrument to pull ring is suggested.</b>	Every 3 months	Remove casing plate (located on top rear of unit). Manually pull ring while chamber is under pressure.	If valve does not open, turn off POWER and call for service.
Door gasket	Weekly	Inspect and clean using Omni-Cleaner or mild detergent and distilled water. Check for leaks (have leaking gasket replaced).	Call authorized service representative for replacement gaskets.
Chamber fill filter	Weekly	Inspect and clean.	See Section 4-II.
Door interlock	Weekly	Inspect. See Section 4-II.	Call authorized service representative for improper closure or signs of wear.
Boiler ring	Weekly	Inspect and clean using non-chlorinated pad which contains no metal.	

### II. CLEANING

It is highly recommended that the autoclave be cleaned a **minimum** of once a week with Omni-Cleaner (Part No. WZ1-091295) and distilled or demineralized water. The Omni-Cleaner is a mildly alkaline concentrate used to clean and descale autoclaves. Minerals, especially chlorides, are corrosive to stainless steel. Therefore,

tap water with a high mineral content should not be used. When sterilizing saline solutions, it is **imperative** that the autoclave be cleaned **after each use**. With proper cleaning, the autoclave will provide higher performance and longer life.

#### A. Cleaning Procedures

- Mix 12 ounces of Omni-Cleaner in one gallon of distilled, demineralized water.

2. Drain water from reservoir. Refill reservoir with a solution of Omni-Cleaner and water. (The reservoir will not be full. However, the level will be adequate.)
3. Run one-20 minute sterilizing cycle to remove all grease and grime from the system. If the autoclave is extremely dirty, it may require a second cleaning. **Do not sterilize instruments while cleaning the autoclave.**
4. Drain cleaning solution from reservoir and chamber. Rinse thoroughly with clean, mineral-free water, and run a rinse cycle for fifteen minutes.
5. Drain rinse solution and wipe inside of boiler thoroughly. If scale or lime deposits remain on inside of chamber, ensure that autoclave is cool. Then clean with water, plastic or nylon scouring pads and a non-chlorinated detergent.

**NOTE:** Detergents containing chlorine are corrosive to stainless steel and should not be used. **Do not** use ordinary steel wool or steel brushes on stainless steel. Pads containing metal may damage chamber.

6. Refill reservoir with clean, mineral-free water. The Magna-Clave is now ready for use.

#### B. Draining Reservoir

1. The reservoir drain hose is located inside the right-hand door of stand, near the top. For Magna-Claves which do not have a stand, the hose will be located under the front edge and to the left of the unit. The drain hose may be drained by removing it from its clip and unscrewing the tip end. The hose should be drained into a 10-quart capacity container. When the reservoir is completely drained, replace tip and clip drain hose in place.

#### C. Cleaning Fill Filter

1. Pull out fill tube and filter assembly from inside of chamber and clean filter with a stiff brush and non-chlorinated detergent.
2. Replace fill tube and filter assembly. Make sure filter lies flat against bottom of chamber. If the filter does not lie flat

against bottom of chamber, an excessive amount of water will remain in the chamber after the sterilizing cycles. Failure to clean this filter regularly will result in excessive time to fill and vent chamber.

#### D. Cleaning Exterior Surface

1. Clean all exterior surfaces with mild detergent and water using a sponge or cloth.
2. Exterior surfaces may be disinfected using an iodophor (Biocide, Biotrol, Inc., N. Salt Lake City, Utah, or equivalent), glutaraldehyde (Cidex, Surgicos, Dallas, Texas, or equivalent) or sodium hypochlorite (household bleach diluted 1:10-1:100. Be sure to follow manufacturer's instructions for mixing and use. Otherwise, unsatisfactory results and/or damage may occur. Do not use household bleach on interior stainless steel surface).

### III. STERILIZATION ASSURANCE

#### A. Clinical Record Keeping

Validate daily and weekly records to assure and substantiate sterilization procedures.

#### B. Techniques for sterilization assurance:

1. Use dated color change indicator closure tapes (3M, St. Paul, MN; Propper, Long Island City, NY) on all packs, or use bags with process indicators.
2. Use internal process indicator strips inside all sterilizer loads to verify gross heat penetration.
3. Use a biological spore test indicator (Attest® Biological Monitoring System, 3M, St. Paul, MN; Propper, Long Island City, NY,) inside a representative sterilizer load weekly.
4. Follow manufacturer's instructions for using all test materials and maintaining good clinical records. Contact dealer to obtain biological test indicators that meet AAMI standards.
5. Follow Preventive Maintenance schedule (Section 4-I,) to ensure proper operation of the autoclave.

### IV. OPTIONAL ACCESSORIES

#### A. Trays

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A basket tray and shallow flat tray are standard equipment. A bedpan tray is available as an option.

#### B. Temperature Recorder

A recording thermometer which provides a permanent record of the steam temperature may be factory or field installed. The steam temperature is recorded on a circular chart for a 24-hour period.

### V. INSPECTIONS

#### A. General

1. The Magna-Clave is a pressure vessel that falls under various state and/or local laws which differ in inspection requirements. Some laws require complete periodic inspection of a pressure vessel. The inspection period varies according to individual laws. This inspection is usually performed by a qualified inspector commissioned by the National Board of Boilers and Pressure Vessels. Insurance companies may also require a similar type of inspection. The governmental agency in your area and/or your insurance company will determine the inspection requirements for your Magna-Clave.
2. For additional information concerning the Magna-Clave, write or call The Pelton & Crane Company, P. O. Box 241147, Charlotte NC, 28224, (704) 588-2676, or your full service dealer. When ordering service or parts, always include the serial number of your unit.

#### B. Inspecting the Chamber

##### 1. Inside Chamber Inspection

Make a thorough inspection inside the chamber every six months. If cracks or fissures are found, call a qualified serviceman. **Do not operate a unit with cracks in the chamber.**

**WARNING:** Do not perform the following test with any pressure in the chamber.

#### C. Door Interlock Check

1. With the unit cold, open door and push down on door locking handle.
2. Rotate **Function** control counterclockwise to **Sterilize**.
3. Depress and hold **Open Door** button and pull up on door locking handle as if to open door. **Do not force door handle.** Use no more force than it takes to open the door normally.
4. If door locking handle can be pulled all the way up and the clamp ring expanded, turn the **Function** control to **Power Off** and call a qualified serviceman immediately. **Never operate a Magna-Clave in this condition.**
5. If door locking ring cannot be opened, rotate the **Function** control to **Vent**, depress **Open Door** button, lift door locking handle up, and open door locking ring. The Magna-Clave is now ready for use again.

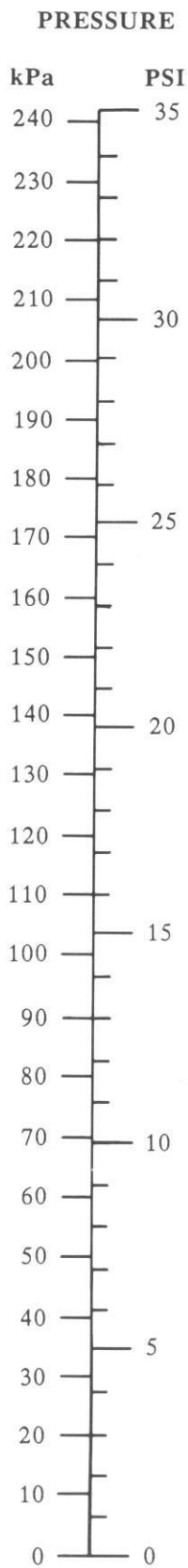
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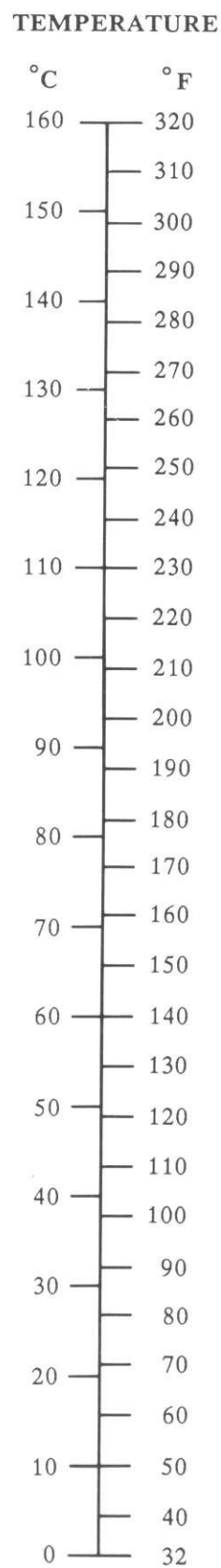
## GLOSSARY

Asepsis:	Freedom from infective microorganisms.
Autoclave:	A container for sterilizing by steam under pressure.
Bioburden:	The level of organisms on a particular item at a specific time.
Biological Monitor or Spore Test:	A preparation of resistant microorganisms which is used to verify sterilization. Usually requires incubation which may be performed by an independent laboratory.
Cold Sterilant:	An agent which sterilizes at room temperature. Usually a chemical such as gluteraldehyde.
Corrosion Inhibitor:	A chemical substance which, when used in small amounts, effectively reduces the corrosion rate of metals such as carbon steel.
Disinfection:	Destruction of bacteria.
Pathogen:	Any microorganism or virus that can cause disease.
Process Monitor:	An indicator which is sensitive to at least one sterilization parameter. Useful to indicate sterilization bypass but does NOT indicate sterilization. Examples: autoclave tape, heat-sensitive bag markings, heat sensitive marked strips, fusible glass melting pellets.
Sanitize:	To make an item surgically clean but not necessarily sterile. Usually accomplished using a low-level disinfectant.
Septic:	Unsterile. Infection caused by introduction of pathogenic microorganisms.
Spores:	The reproductive cell of some microorganisms which is highly resistant.
Sterilization:	Total destruction of all microbial life including bacteria, viruses and spores.
Ultrasound:	A type of cleaner which uses ultrasonic waves at high frequency to agitate contaminants and dirt from items.
Vegetative Bacteria:	A freely multiplying form of bacteria.

# AUTOCLAVE CONVERSION SCALE



1 PSI = 6.89 kPa  
1 kPa = 0.145 PSI



$^{\circ}\text{C} = 5/9 ( ^{\circ}\text{F} - 32^{\circ} )$   
 $^{\circ}\text{F} = (9/5 \times ^{\circ}\text{C}) + 32^{\circ}$

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## Notes

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