

**STEAM STERILIZER**  
**Model ME                      Model UME**  
**Series 5030                    Series 5080**  
**(8/79)                              P-750104-091**

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\*American Sterilizer Company — 1979

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## INTRODUCTION

This manual provides information for installation, operation, and servicing of American Sterilizers in the 5030 and 5080 series. It serves as a guide to proper maintenance methods and includes theory of operation. It also provides illustrated parts lists to help identify replacement parts.

Although this manual covers a great number of models, operation is similar in every case. The illustrations show basic types. Modifications and special equipments are shown as inserts to the illustrations. The 5080 series sterilizers are type "M.E.", or "Method Engineered". The 5030 series are type "U.M.E.", or "Utility, Method Engineered". The M.E. and the U.M.E. are identical except for two points of difference. The prime difference is the finish of the door, hinge, arms, coverplate, and control panel. The M.E. has stainless steel finish on these parts while the U.M.E. has enamel finish. Further, the Solution Exhaust system is standard equipment for the M.E., but is optional on the U.M.E.

Both types may have the following special features:

Single door	Double door
48" length	60" length
Right hand door	Left hand door
Recessed mounting	Cabinet mounting
With tracks	With shelving
For surgical dressings	For lab or formula

The combination of features governs the complete series number. The even number models are single door type, and odd number models are double door. A dash number follows the model number (i.e: 5085-1) and this identifies the exhaust system in the M.E. series. For example, 5084-5 indicates an M.E. single door sterilizer with atmospheric exhaust. The odd dash number indicates atmospheric exhaust system, and an even dash number indicates condenser exhaust. Thus 5087-2 is an M.E. double door sterilizer with condenser exhaust. Since it is type M.E., it also carries the Solution Exhaust system as standard equipment. Note, however, that the dash number of the 5030 series carries no specific meaning as it does in the 5080 series.

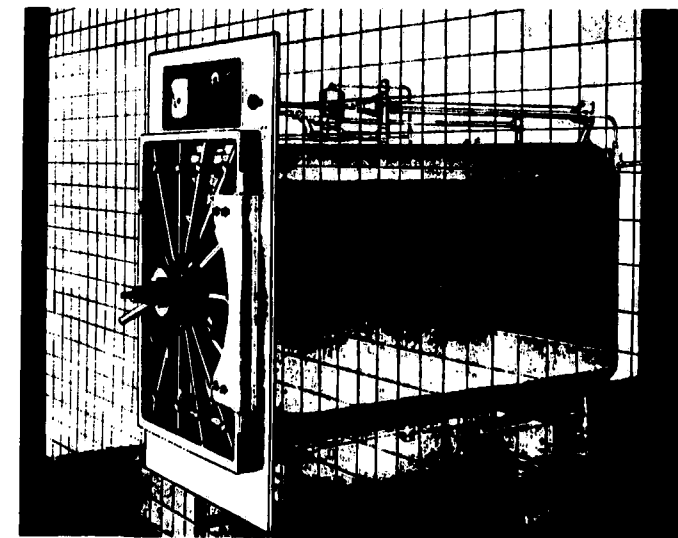


Figure 1. A Typical Model M.E. or Model U.M.E. Sterilizer

## CHAPTER I

### STEAM STERILIZER DATA

Rough-in plans are provided to contractors who do plumbing, electrical wiring, and carpentry for AMSCO sterilizers. Refer to drawings 60052 through 60057, and 68056 through 68058 for these plans. See also Chapter 2 for typical suggested installations. For proper operation of the sterilizer, these specifications must be

observed. The serviceman may trace a persistent trouble to a faulty installation.

The following table presents typical data. Refer to specific model number and rough-in sheets for precise figures.

TABLE OF LEADING PARTICULARS

	Size	Single Door	Double Door
Length (Overall)	24 x 24 x 36 24 x 36 x 36 24 x 36 x 48 24 x 36 x 60	67" 67" 79" 91"	72" 72" 84" 96"
Width (Max)	Over Panels Over Cabinet Over Fin, Collar	36" 37" --	36" 37" 40-1/4"
Height (Max)	24 x 24 x 36 24 x 36 x 36 - 48 - 60	66" 78"	67-3/4" 79-3/4"
Weight (Approx)	24 x 24 x 36 24 x 36 x 36 24 x 36 x 48 24 x 36 x 60	1800 lbs. 2200 lbs. 2600 lbs. 3100 lbs.	2100 lbs. 2600 lbs. 3000 lbs. 3500 lbs.
Electrical Requirements	110-120 Volts AC, 60 Cycle 1 Amp. for Atmospheric Exhaust 2.5 Amp. for Condenser Exhaust		
Steam Requirement	50 to 80 psi, 65 to 100 lbs./hr.		
Cold Water	On Condenser Exhaust only, 20 to 50 psi		
Electric Fittings	1/2" conduit box		
Plumbing Fittings	3/4" NPT steam return 1-1/2" NPT steam exhaust, on Atmospheric Exhaust only 1/2" NPT cold water terminal, on Condenser Exhaust only 1-1/2" ODT waste terminal		
Steam Chamber	Double-walled, nickel-clad, flange steel, 36 psi max		
Door	Flange steel, nickel-clad		
Hinge	Flange steel		

To clarify terms used:

- Atmospheric Exhaust: the steam and gases are vented to outside air through a large pipe or stack.

- Condenser Exhaust: the steam is cooled and condensation is vented to a sewage system. It is used where an Atmospheric Exhaust stack

would be too long and costly to be practical, or where exhaust steam and gases are objectionable.

- Solution Exhaust: the sterilizer steam pressure is slowly reduced when liquids are sterilized. Sudden pressure drop causes containers to blow off caps and spill liquids. A slow exhaust prevents this.

## CHAPTER II

### INSTALLATION

Proper sterilizer installation is important to the serviceman because it affects operation. Trouble may stem from lack of care in installation steps. A good serviceman should spot and correct such faults. Examine every new installation with a critical look at the plumbing and electrical connections.

Typical installation plans are shown for recessed sterilizers in figures 2 and 3. Figures 4 and 5 show the plans for a typical cabinet style installation for both single and double door models. The space requirements given are necessary to ensure good operation, efficiency and ease of installation and maintenance. Location of utility terminations can be critical. A waste line may clog if needlessly long or bent. A steam line may restrict flow if not large enough and free of turns. Valves and switches should be provided to turn off utility lines during repairs.

In most cases the sterilizer is delivered in its crate and must be uncrated at the installation site. It is the duty of the AMSCO serviceman to supervise the installation and to test and demonstrate the equipment. Contractors do the required work of utility installation and supervise their own work crews. The AMSCO man must see that the job is done right, using tactful direction to job foremen. Avoid conflict and strive for friendly co-operation.

Uncrating and installation instructions are as follows:

1. Leave the crate on if possible, if unit must be laid on its side and turned to enter tight doors. At location remove the four sides and top of crate. Use a nail puller to open the crate. Do not shove bars into the crate to pry off the sides for this may result in damage.

2. Leave skid on until the unit is near final location. Guard against rough handling.

3. Remove the four long rods or bands which attach the sterilizer to the skid frame. Lift the sterilizer legs off the skid and slide skid out of the way. Lower sterilizer to the floor or onto the wheel dollies.

4. Place wheel dollies under the four legs or supporting structure. Wheel carefully into position and remove the wheel dollies. On smaller units it may be simpler to use only two wheel dollies and lift one end manually.

5. Remove all packing material and clean the area. Do not remove protective paper from the panels. Be sure to check all wrapping materials so no parts are lost in waste paper. Inspect the unit for shipping damage and make proper reports at once if any damage is found.

6. Slide sterilizer into final position and check approximate location of utility lines with regard to the needs of the model. Open the sterilizer door and place a liquid level on the floor of the steam chamber. Adjust floor flanges to lower front of sterilizer approximately 1/4 inch more than rear. Check for proper drainage by emptying a quart bottle of water at rear of chamber and observe if water drains out properly.

7. Connect the sterilizer to the following lines:

- a. Connect funnel outlet to waste line. Line must have trap and venting according to local plumbing code.

- b. Connect exhaust pipe. Stack must run free and clear to atmosphere and must be vertical or not more than 45° from vertical. Size of stack must be large enough to allow continuous flow. Long runs, over 20 feet, can cause ventilation problems due to back pressure.

- c. Connect to a vented steam return. DO NOT connect to a pressure or vacuum return system. Steam traps may not operate properly if this precaution is ignored.

- d. If unit has a Condenser Exhaust, make connection to a cold water line with minimum pressure of 20 psi and maximum pressure of 50 psi. A brass shutoff valve must be provided in the line by plumbing contractors.

- e. Connect to a steam supply of 50 to 80 psi. Before connecting, blow out riser line thoroughly to remove foreign matter and to drain



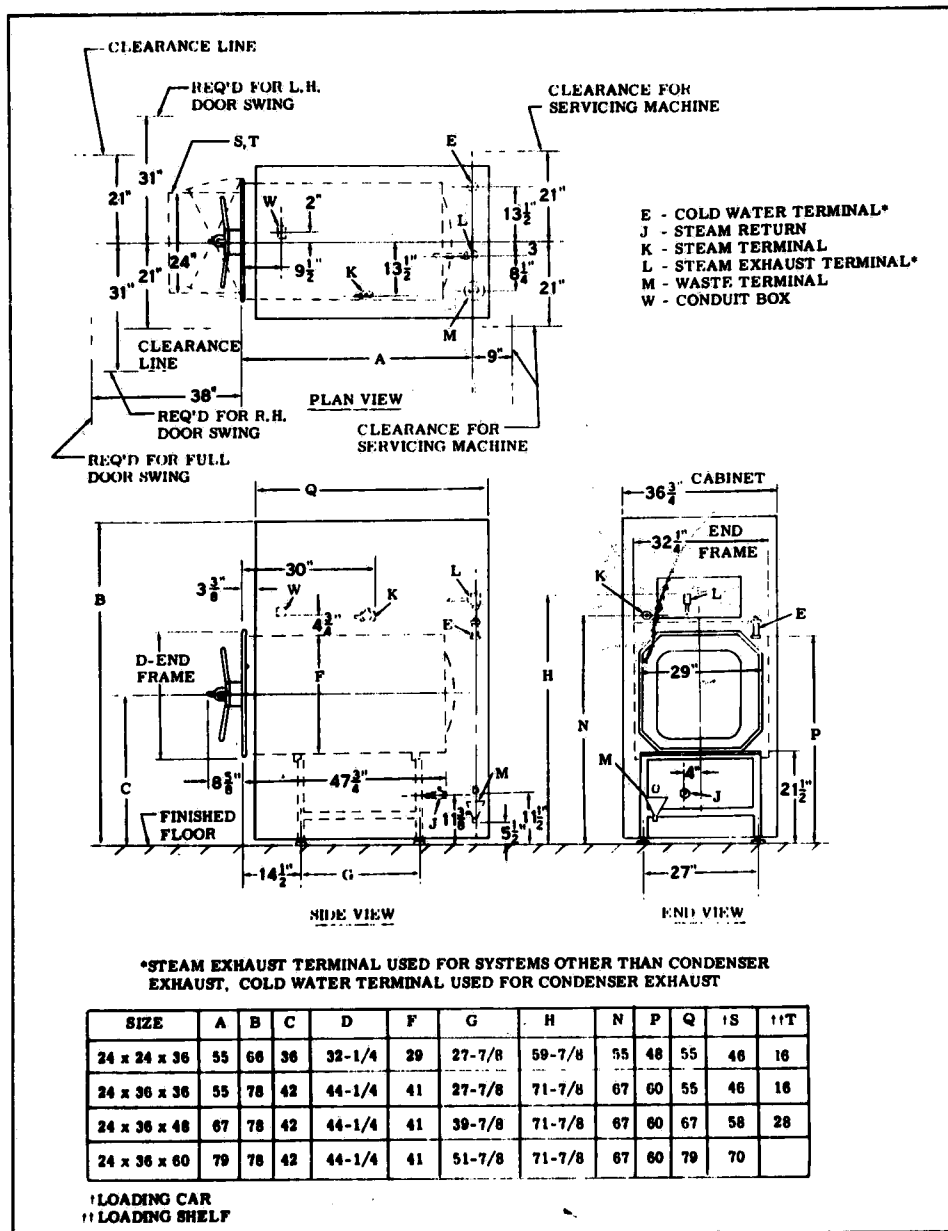


Figure 4. Installation Plan for Cabinet Mounted Single Door Sterilizers

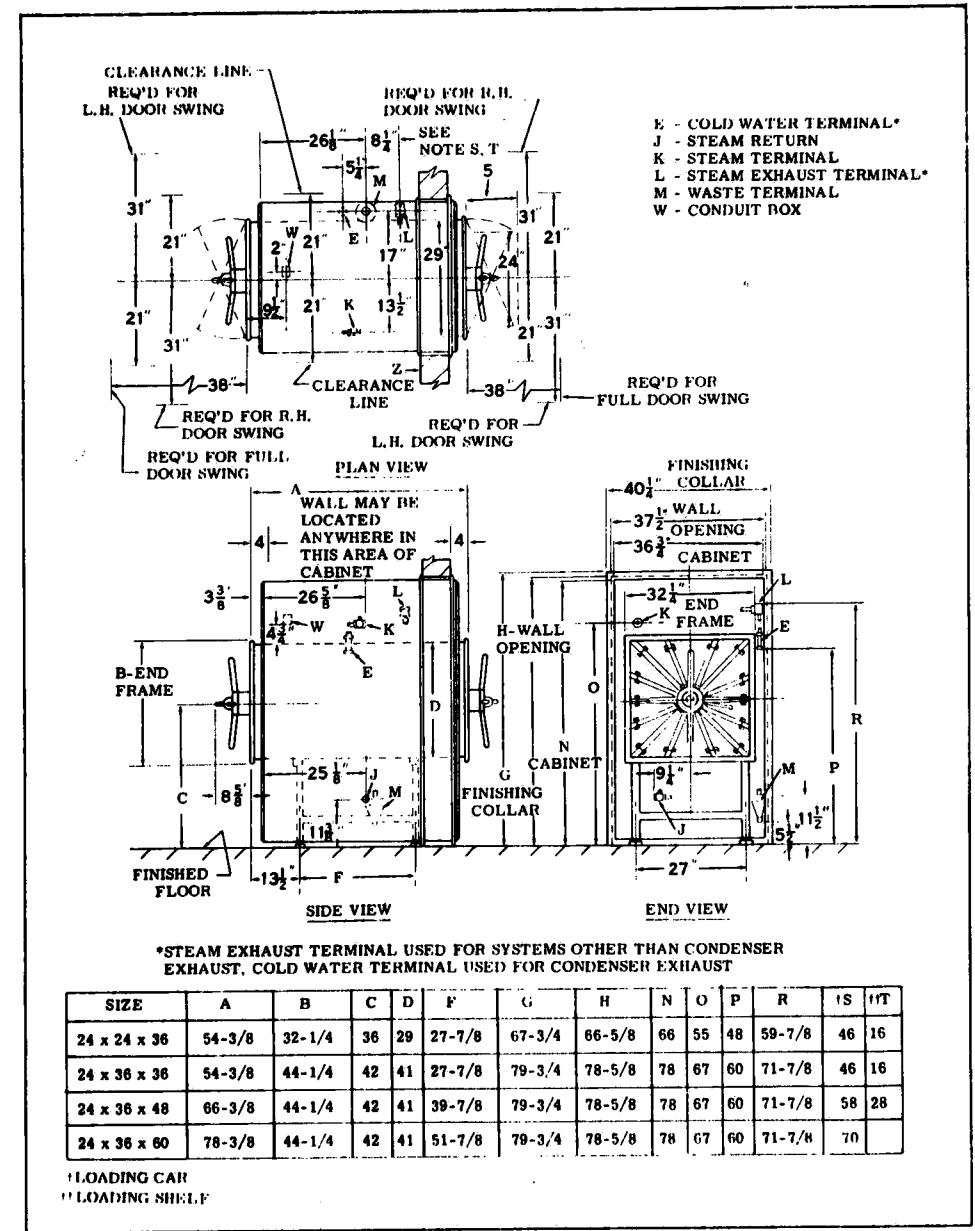


Figure 5. Installation Plan for Cabinet Mounted Double Door Sterilizers

moisture. Steam must be "dry". A shutoff valve must be provided.

7. Connect to a single-phase, 110-120 volt AC line with current capacity for 1 ampere minimum. If unit has a Condenser Exhaust, line must have 2.5 ampere minimum rating. External fusing and turnoff switch is required for safety and to satisfy local wiring code in most cases.

8. Adjust the sterilizer for service and attach the side panels, as required. Contractors can

complete wall enclosures for the recessed style installation.

9. Remove the protective paper from the panels and clean with Stoddard cleaning solution or any suitable cleaner to remove remaining adhesive. Check the sterilizer general appearance while cleaning. Leave it spotless and shining. Demonstrate correct operation to the users; caution about good maintenance schedules and care of the unit. Be certain of customer satisfaction before you leave.

## CHAPTER III OPERATING INSTRUCTIONS

### PRELIMINARY TO LOADING STERILIZER

1. **CLEANING CHAMBER.** Daily, before heating sterilizer, remove plug screen from bottom of chamber and clean lint and sediment from strainer. Wash chamber interior.

#### CAUTION

Do NOT use abrasive powder or steel wool. Use only hot water and mild

detergents on heavy deposits, soaking loose if necessary.

2. **RECORDER.** Remove and replace the chart at the start of each day. Turn the chart so the pen is within the correct time segment, indicating correct time. Tighten the hub cap firmly so chart does not slip. Fill the ink reservoir and watch the chart to make sure the pen is writing. Refer to the maintenance section in Chapter IV if the recorder is not functioning.

### PREPARING MATERIAL FOR STERILIZATION

1. **PACKAGING.** Objects to be sterilized must be loosely wrapped and loosely packed. Packaging material must permit free flow of heat and steam to enclosed instruments and equipment. Improper wrapping may prevent sterilization. Use only Kraft paper or double thickness muslin for wrapping material.

Use the wrapping procedures described in the Table of Wrapping Instructions, to ensure complete sterilization and to protect instruments.

2. **CLEANING.** The type of material determines the exposure time required to sterilize. Materials should be thoroughly and carefully cleaned before loading in the sterilizer.

3. **LOADING.** Never overload the sterilizer. Load it loosely to allow steam a free and even distribution. Steam must contact every part of

the load to assure sterile supplies. Place flat packs of supplies on edge, placing alternate tiers crosswise to assure adequate steam circulation. Do not sterilize rubber gloves with heavy loads of general supplies. NEVER try to sterilize solutions with other supplies.

4. **FORMULAS.** Terminal heating is done by either the non-pressure (Streaming Steam) method or by the Pressure Method. Do not subject lactic acid formulas or protein milk formulas to terminal heating unless certain the solution can stand such heating without curdling.

For a complete and concise handbook on sterilization practices, see "Guide to Standards for Microbial Control Processing of Hospital Supplies and Equipment". This booklet is published by American Sterilizer Co.

TABLE OF WRAPPING INSTRUCTIONS

ITEM	WRAPPING PROCEDURE
Lensed instruments, Crytoscopes, etc.	Wrap each item, using one layer of wrap material between each part of the instrument to avoid damage.
Rubber or plastic tubing, drains, etc.	Coil loosely, avoiding kinks, and wrap.
Rubber or plastic catheters.	Catheters should not be coiled, but should be wrapped separately, full length.
General surgical instruments.	Wrap separately or in a package with one layer separation. Sharp instruments may be placed in a tray, on a towel, and covered by another towel. All hinged instruments should be opened prior to wrapping, and as clean as possible.
Heart-lung machine assemblies.	It is most essential to wrap heart-lung machine parts carefully. Wrap each part separately, if at all possible. Tubing must have loose cotton plugs in each end. Do this also to all openings of the machine, and then wrap loosely. Steam must enter all inner portions of machine to sterilize it.

## "AMERICAN" SURGICAL SUPPLY STERILIZER

### CYCLOMATIC CONTROL Steam Heat

#### OPERATING INSTRUCTIONS

1 **Daily Before Heating Sterilizer.** Turn plug screen counterclockwise to remove from bottom of chamber and clean lint and sediment from pores of strainer. Replace chart in controller before starting the day's work.

2 **To Heat Jacket.** With "Operating Handle" (located on righthand side of control panel) at "OFF" position, open "Steam Supply Valve." Do not attempt to sterilize until "Jacket Gauge" shows 16-18 pounds pressure.

#### ARRANGEMENT OF LOAD

Place flat packs of supplies on edge. If there are several tiers of such packs, place alternate tiers crosswise of each other to assure adequate steam circulation. Do not permit crowding of packs into tight masses. Do not sterilize rubber gloves with heavy loads of general supplies. Under no condition attempt sterilization of solutions with other supplies.

3 **DOOR WITH "QUICK THROW" HANDLE.**  
**To Lock Door.** Move "Quick Throw" Handle to right (clockwise) until arms are positioned radially in slots. Then continue tightening door by turning handwheel clockwise.

**To Open Door.** When "Chamber Gauge" shows zero pressure, turn handwheel to left (counterclockwise) until it ceases to turn freely. Then move "Quick Throw" handle to left (counterclockwise) to disengage arms from slots.

#### NOTE

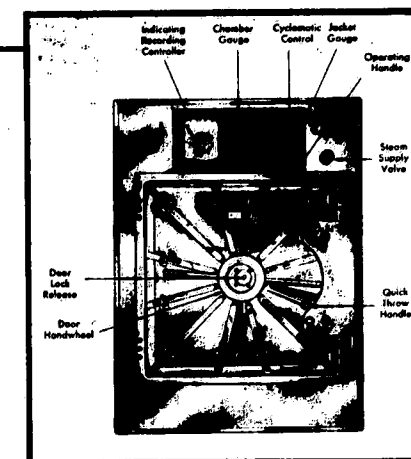
**For Steam Lock Door.** As precautionary measure before unlocking door, press in "Door Lock Release" to make sure locking clutch is disengaged.

4 **To Sterilize All Materials.** With load in sterilizer and door locked, turn "Timer" to desired exposure period. Then turn "Selector" switch to the appropriate position of---

"Slow Exh." for liquids.

"Fast Exh." if drying is not required.

"Fast Exh. and Dry" for surgical packs, wrapped supplies, etc.



Turn "Operating Handle" (clockwise only) to "STER." The operator may now leave the sterilizer until cycle has been completed.

#### NOTE

For further directions see control panel.

#### RECOMMENDED EXPOSURE PERIODS

250° F., (121° C.)

	Minutes
Instruments in trays with muslin covers . . . . .	15
Utensils in muslin covers . . . . .	15
Rubber gloves in muslin wrappers . . . . .	20
Surgical packs, dressings in muslin covers . . . . .	30
Solutions (aqueous) in Pyrex flasks . . . . .	30
Drums with muslin liners . . . . .	45

With the "Operating Handle" turned to the "Ster." position, the red signal light (designated "Steam") will come on, indicating that steam is entering the chamber. When the temperature in the chamber drain line reaches 250° F., the "Timer" will begin to operate and count back to zero. The clear light indicates when the "Timer" is operating. At the completion of the timed sterilizing period, the valve automatically moves to the selected "Exhaust" position. Then the red signal goes out and the yellow ("Exhaust") light comes on. If the "Selector" has been set on the "Fast Exh. and Dry" position, the "Valve" will automatically move to "Dry" after the chamber pressure has been reduced to zero.



When the load is completely processed, the amber ("Sterile") signal light will come on and an alarm will sound until the "Operating Handle" is turned manually to "Off." The load may now be removed from the sterilizer.

If further drying is required, open the door slightly and allow load to remain in sterilizer for approximately 5 minutes.

**Manual Operation.** In the event of electrical current failure, the sterilizer may be operated manually by simply turning the "Selector" to "Manual," and then turning the "Operating Handle" (clockwise only) to the proper sequence of operations in the sterilizing cycle.

**Manual Operation With Condenser Exhaust.** When condenser exhaust is furnished and in the event of electrical current failure, the sterilizer may be operated manually by simply turning "Selector" to "Manual," Open "Condenser Exhaust Valve" and then turn "Operating Handle" (clockwise only) to that position on the dial which corresponds to the proper sequence of operations in the sterilizing cycle. Close "Condenser Exhaust Valve" at end of sterilizing cycle.

**Shut Off "Steam Supply Valve."** Unless sterilizer is to be used again within a short time, close this valve and permit sterilizer to cool.

## "AMERICAN" FORMULA STERILIZER

### RECTANGULAR TYPE WITH CYCLOMATIC CONTROL (Equipped with Reset Timer) Steam Heat

#### OPERATING INSTRUCTIONS

**Daily Before Heating Sterilizer.** Remove plug screen from bottom of chamber and clean lint and sediment from pores of strainer. Replace chart in controller before starting the day's work.

**DOOR WITH "QUICK THROW" HANDLE.**  
**To Lock Door.** Move "Quick Throw" handle to right (clockwise) until arms are positioned radially in slots. Then continue tightening door by turning handwheel clockwise.

**To Open Door.** When "Chamber Gauge" shows zero pressure turn handwheel to left (counter-clockwise) until it ceases to turn freely. Then move "Quick Throw" handle to left (counter-clockwise) to disengage arms from slots.

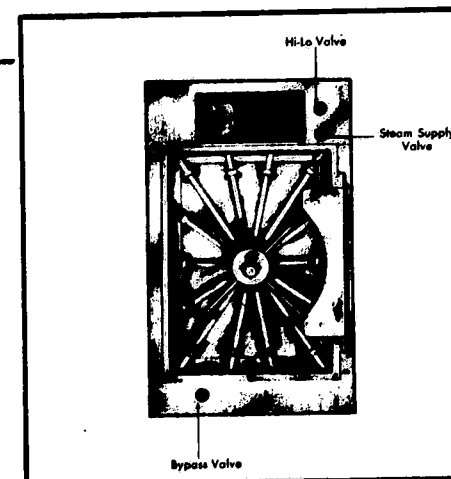
#### NOTE

**For Steam Lock Door.** As precautionary measure before unlocking door, press in "Door Lock Release" to make sure locking clutch is disengaged.

#### TERMINAL HEATING OF FORMULAS

Terminal heating may be conducted by either the Non-Pressure (streaming steam) Method or the Pressure Method. Do not subject lactic acid formulas or protein milk formula to terminal heating unless it is known that the preparation will withstand such heating without evidence of curdling.

**Operation of Cyclomatic Control.** Always set "Selector" and "Timer" before turning "Operating Handle" (located on righthand side of control panel). When "Operating Handle" is turned to sterilizing position the red light will come on. When pressure and temperature have been reached the clear light will come on indicating "Timer" in operation. At completion of timed cycle, the "Operating Handle" will automatically turn to "Exhaust," the red and clear lights go out and the yellow light will come on (indicating "Exhaust." When "Fast Exhaust" and "Slow Exhaust" are selected, the amber light will come on when chamber pres-



sure has been exhausted, and the buzzer will note completion of sterilizing cycle. If "Selector Switch" is set to "Fast Exhaust and Dry," when the pressure is reduced to zero the "Operating Handle" will automatically turn to "Dry" position, turning on the Timer for 15-minute timed dry cycle. After completion of the dry cycle the amber light will come on and the buzzer will sound until operator turns "Operating Handle" to "Off" position. Load may be removed from sterilizer. For further directions see front panel.

**Recommended Method — Non-Pressure (Streaming Steam) Sterilization at 212° F., (100° C.)** Set controller by moving red pointer at top to 212° F. With the "Operating Handle" at "Off," turn handle on "Pressure Regulator" to left ("Low" position) as far as it will go. Open "Steam Supply Valve." Place racks of bottles in sterilizer and lock door. Then open the "By-pass Valve." Set the "Selector" at "Slow Exh." and the "Timer" to 30 minutes exposure. When the "Jacket Gauge" indicates 5 to 7 pounds pressure, turn the "Operating Handle" to "Ster." The operator may now leave the sterilizer until cycle has been completed. The thermostat and pressure regulator are set at the factory for streaming steam operation unless otherwise specified.

**Alternate Method — Pressure Sterilization at 230° F., (110° C.)** Set controller by moving red pointer at top to 230° F. Set the

"Pressure Regulator" to obtain 7 pounds jacket pressure. Turn handle on "Pressure Regulator" to left ("Low" position) as far as it will go. Open "Steam Supply Valve" and allow jacket pressure to build up to 7 pounds. Place racks of bottles in sterilizer and lock door. Set the "Selector" at "Slow Exh." and the "Timer" to 10 minutes' exposure. Close the "By-pass Valve" and turn the "Operating Handle" to "Ster." Operator may now leave the sterilizer until cycle has been completed.

➤ To Sterilize Empty Bottles, Nipples, Utensils, and Wrapped Supplies. Set controller by moving red pointer at top to 250° F. With the "Operating Handle" at "Off" turn handle of "Pressure Regulator" to right ("High" position) as far as it will go. Open "Steam Supply Valve." Allow the jacket pressure to build up to 15-17 pounds. Place load in sterilizer and lock door. Close the "By-pass Valve." Turn "Timer" to desired exposure period. Then turn "Selector" to the appropriate position of---

"Fast Exh." if drying is not required.

"Fast Exh. and Dry" for wrapped supplies.

Turn "Operating Handle" (clockwise only) to "Ster." Operator may now leave sterilizer until cycle has been completed.

#### RECOMMENDED EXPOSURE PERIODS AT 250° F., (121° C.)

	Minutes
Utensils, containers and measuring devices . . .	15
Nursing bottles, inverted in racks . . . . .	15
Nipples, in muslin bags . . . . .	15
Paper caps, loosely packed in tray . . . . .	15
with perforated bottom	
Rubber gloves, in muslin wrapper . . . . .	15
Table covers, gowns, face masks, in . . . .	30
muslin wrapper	

➤ **Manual Operation.** In the event of electrical current failure, the sterilizer may be operated manually by simply turning the "Selector" to "Manual" and then turning the "Operating Handle," (clockwise only) to that position on the dial which corresponds to the proper sequence of operations in the sterilizing cycle.

➤ **Manual Operation With Condenser Exhaust.** When condenser exhaust is furnished and in event of electrical current failure, the sterilizer may be operated manually by turning "Selector" to "Manual." Open "Condenser Exhaust Valve" and then turn "Operating Handle" (clockwise only) to that position on the dial which corresponds to the proper sequence of operations in sterilizing cycle. Close "Condenser Exhaust Valve" at end of sterilizing cycle.

➤ **Shut Off "Steam Supply Valve."** Unless sterilizer is to be used again within a short time, close this valve and permit sterilizer to cool.

## "AMERICAN" LABORATORY STERILIZER (AUTOCLAVE)

CYCLOMATIC CONTROL  
Steam Heat

### WARNING LIQUID STERILIZATION

To prevent possible personal injury or property damage resulting from bursting bottles and hot fluid, you must follow the recommended procedure listed below:

#### RECOMMENDED PROCEDURE:

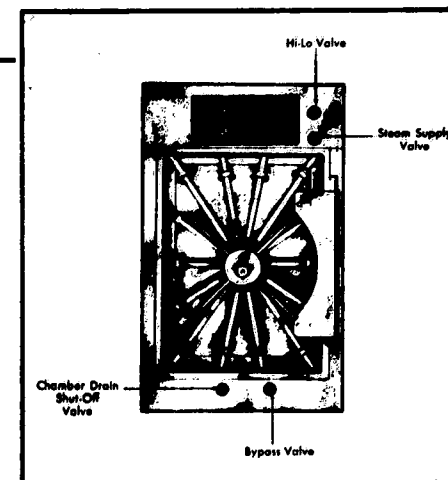
- Use only vented closures — do not use screw caps or rubber stoppers with crimped seal.
- Use only Type I borosilicate (Pyrex) glass bottles — do not use ordinary glass jugs or any container not designed for sterilization.
- Use sterilizer "Liquids" cycle. No other cycle is safe for liquid sterilization.
- At end of cycle, open sterilizer door, no more than ½ inch. Wait 10 minutes before unloading sterilizer.
- 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.
- Bottles should be cool to touch before attempting to move them from sterilizer loading car or shelves to the storage area.

### OPERATING INSTRUCTIONS

➤ **Daily Before Heating Sterilizer.** Turn plug screen counterclockwise to remove from bottom of chamber and clean lint and sediment from pores of strainer. Replace chart in controller before starting the day's work.

➤ **DOOR WITH "QUICK THROW HANDLE"**  
To Lock Door. Move "Quick Throw Handle" to right (clockwise) until arms are positioned radially in slots. Then continue tightening door by turning handwheel clockwise.

To Open Door. When "Chamber Gauge" shows zero pressure, turn handwheel to left (counterclockwise) until it ceases to turn freely, then move "Quick Throw Handle" counterclockwise to disengage arms from slots.



### NOTE

For Steam Lock Door. As precautionary measure before unlocking door, press in "Door Lock Release" to make sure locking clutch is disengaged.

➤ **Operation of Cyclomatic Control.** Always set "Selector" and "Timer" before turning "Operating Handle" (located on righthand side of control panel). When "Operating Handle" is turned to sterilizing position the red light will come on. When pressure and temperature has been reached the clear light will come on indicating "Timer" in operation. At completion of timed cycle, the "Operating Handle" will automatically turn to "Exhaust," the red and clear lights go out and the yellow light will come on (indicating "Exhaust.") When "Fast Exhaust" and "Slow Exhaust" are selected, the amber light will come on when chamber pressure has been exhausted, and the buzzer will note completion of sterilizing cycle. If "Selector Switch" is set to "Fast Exhaust and Dry," when the pressure is reduced to zero the "Operating Handle" will automatically turn to "Dry" position, turning on the Timer for 15-minute timed dry cycle. After completion of the dry cycle the amber light will come on and the buzzer will sound until operator turns "Operating Handle" to "Off" position. Load may be removed from sterilizer. For further directions see front panel.

**Pressure Sterilization 121°C. (250°F.)**  
Set controller by moving red pointer at top to 121°C. With "Operating Handle" at "Off," turn handle of "Pressure Regulator" to right ("High" position) as far as it will go. Open "Steam Supply Valve." Allow the Jacket pressure to build up to 16-18 pounds. Place load in sterilizer; close and lock door. Close "Bypass Valve." Open "Chamber Drain Shutoff Valve." Turn "Timer" to desired exposure period. Then turn "Selector" to the appropriate position for exhausting chamber. Turn "Operating Handle" (clockwise only) to "Ster." Operator may now leave sterilizer until cycle has been completed.

#### WARNING

**TO PREVENT POSSIBLE PERSONAL INJURY RESULTING FROM BURSTING BOTTLES AND HOT FLUID, USE ONLY BOROSILICATE (PYREX) FLASKS WITH VENTED CLOSURES FOR STERILIZING LIQUIDS.**

**• SEE PAGE 16A FOR FURTHER INFORMATION**

#### RECOMMENDED PERIODS OF EXPOSURE 250°F. (121°C.)

	Minutes
Solutions--- 75 ml (Pyrex) Flasks . . . . .	20
Solutions--- 250 ml (Pyrex) Flasks . . . . .	25
Solutions--- 500-1000 ml (Pyrex) Flasks . . . . .	30
Solutions--- 1000 ml ASPF (Pyrex) Flasks . . . . .	35
Solutions--- 2000 ml ASPF (Pyrex) Flasks . . . . .	45
Solutions---1000-2000 ml Erlenmeyer (Pyrex) . . . . .	30
Flasks	
Solutions--- 1000 ml Fenwal (Pyrex) Flasks. 30	
Solutions--- 1500 ml Fenwal (Pyrex) Flasks. 40	
Test Tubes (150x18 mm.) . . . . .	15
Surgical packs in muslin wrappers . . . . .	30
Rubber gloves in muslin wrappers . . . . .	20
Instruments in trays with . . . . .	15
muslin covers	
Utenells in muslin wrappers . . . . .	15
Intravenous sets . . . . .	30

**To Cool Solutions Following Sterilization.** Make sure that "Selector" on Cyclo-matic Control is set at "Slow Exh." This will insure sufficiently slow reduction in chamber pressure, at end of exposure period, to prevent loss of solution by boiling. When pressure has reduced to zero, open door about 1/2" for ten minutes. This is to prevent a rush of air into the chamber that is below temperature of bottles

which may cause bottles to crack or tops to blow off bottles. Then open door all the way and remove load.

**Non-Pressure (Streaming Steam) Sterilization at 100°C. (212°F.)** Set controller by moving red pointer at top to 100°C. With "Operating Handle" at "Off," turn handle on "Pressure Regulator" to left ("Low" position) as far as it will go. Place load in sterilizer, close and lock door. Open "Steam Supply Valve." When "Jacket Gauge" shows 5 to 7 pounds pressure open "Bypass Valve." Set "Selector" at "Slow Exh." and "Timer" to desired period of sterilization. Turn "Operating Handle" to "Ster." Operator may now leave the sterilizer until cycle has been completed. At end of exposure period, turn "Operating Handle" to "Off" and wait about 5 minutes before opening door to remove load.

**To Coagulate and Sterilize Blood Serum.** With "Selector" set at "Manual," turn handle on "Pressure Regulator" to right ("High" position) as far as it will go. Open "Steam Supply Valve." Place racks of slants in sterilizer, preferably supported near center of chamber on non-heat-conducting wooden (cypress) shelf. Close and lock door. Close "Shutoff Valve" and "Bypass Valve" tightly. Turn "Operating Handle" to "Ster." and maintain pressure 15-17 pounds for 60 minutes. At end of 60-minute exposure period, turn "Operating Handle" (clockwise only) to "Slow Exh." When pressure reduces to nearly zero, open "Shutoff Valve" and wait about 5 minutes before opening door to remove load.

#### NOTE

The efficiency of this process is largely dependent upon having all chamber outlet valves and door tightly closed.

**Manual Operation.** In the event of electrical current failure, the sterilizer may be operated manually by simply turning the "Selector" to "Manual" and then turning the "Operating Handle," (clockwise only) to that position on the dial which corresponds to the proper sequence of operations in the sterilizing cycle.

**Manual Operation With Condenser Exhaust.** When condenser exhaust is furnished and in the event of electrical current failure, the sterilizer may be operated manually by simply turning "Selector" to "Manual." Open

"Condenser Exhaust Valve" and then turn "Operating Handle" (clockwise only) to that position on the dial which corresponds to the proper sequence of operations in the sterilizing cycle. Close "Condenser Exhaust Valve" at end of sterilizing cycle.

**Shut Off "Steam Supply Valve."** Unless sterilizer is to be used again within a short time, close this valve and permit sterilizer to cool.

#### LIQUID STERILIZATION

Your AMSCO Sterilizer is designed to process liquids when borosilicate (Pyrex) flasks with vented closures are used.

Borosilicate (Pyrex) glass is recommended because it is a superior glass capable of containing higher pressures, of resisting thermal shock (such as cold air striking the hot glass), and of withstanding repeated handling.

Vented closures are recommended because, by design, they will prevent excess pressure by automatically venting a flask!

If other types of glass (such as flint glass) and non-venting (sealed) closures are used to sterilize liquids in your AMSCO Sterilizer, a potential dangerous condition, capable of causing personal injury and property damage, is created. As the liquid and residual air in a sealed flask are heated, they expand and create an internal pressure greater than the external pressure of the steam. With the weaker glass, a greater potential for bursting exists.

After the sterilization exposure, the chamber is exhausted slowly but it still exhausts more rapidly than the pressure within a sealed flask.

This pressure within the flask will exist until the residual air and the liquid have cooled (unlike a flask with a vented closure that prevents this excess pressure). Thus, the potential exists for the flask to burst and cause personal injury or property damage.

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## CHAPTER IV MAINTENANCE

### INSPECTION, ADJUSTMENTS, AND LUBRICATION

A minute spent in maintenance is worth an hour of trouble shooting. Trouble PREVENTION is the goal. A regular schedule of maintenance can keep equipment in good condition for years. Trouble occurs when prevention becomes lax. Take the time to do a thorough job of maintenance, even though the unit may not seem to require it.

A few basic steps of sterilizer care are given here. If experience shows that more steps are necessary, keep a record of them in the back of this manual. Build up a fund of knowledge to improve your work and keep customers' equipment in prime condition.

Inspect the sterilizer for obvious signs of damage or trouble. Replace burned-out pilot lamps or locate and repair cause of trouble. Tighten loose knobs and make sure they are on correctly. Clean the recording pens carefully and refill with fresh ink. These are all small irritating problems that annoy operating personnel and lead to dissatisfied customers.

Check the steam supply line and make sure pressure is adequate. Then adjust the steam control valve as instructed in Chapter VII. If the HI-LO valve is used, be sure to check it at both high and low limits and adjust if necessary.

Apply steam pressure and check carefully for leaks in the plumbing. This check may also show up bad valve packings. Operate the sterilizer through the SLOW EXH phase and make sure the solution control valve (Standard on Model "ME"; Optional on Model "UME") is operating properly. It should exhaust any size load of fluids in a maximum time of 45 minutes, without more than 5% fluid loss and without

blowing stoppers, yet permitting automatic sealing of American Sterilizer Square-Pak Flasks.

Open and clean the vacuum dryer as instructed in Chapter VII. Replace the monel wool cartridge with a new unit.

Where a Condenser Exhaust system is also used, check the plumbing for leaks. Operate the solenoid valve and listen for a solid thump when it closes. Chattering, buzzing, or a soft closing is an indication of trouble. Open the flow regulator and solenoid valves and flush the system. Then reset the flow regulator for minimum water flow.

Clean the float trap and steam traps and blow out sediment from the steam system. Clean chamber drain strainer at the bottom of the sterilizing chamber.

Check the door closing to make sure it centers and closes easily. Adjust if necessary to compensate for wear. Close the door on a sheet of paper to check the door gasket. Try to pull the sheet out. If it slides out without tearing, add shims as required under arm fulcrum blocks or the gasket should be replaced. Repeat the test with the paper at several places around the door edge. Use a small grease gun and lubricate the door as directed in Chapter VII. Place one small drop of No. 30 oil on the door hinge pins. Operate the door several times to work in the grease and oil, and wipe off any excess.

Take a critical look at the general appearance of the sterilizer and wipe it clean of all dirt and smudges. Touch up all painted surfaces where scratches show. A small can of touch-up paint in the tool box will do nicely.

## CHAPTER V CONTROL SYSTEM

### THEORY OF OPERATION

Moist heat in the form of saturated steam is the most dependable medium known for destruction of all forms of microbial life. Steam heat leaves no toxic residue on materials after sterilization. When steam enters the sterilizing chamber, it quickly condenses on cold objects. As it condenses, it gives up a large amount of heat to the cold objects, heating and wetting them. It thus provides the two main requirements for heat destruction of microbial life; moisture and heat. These two factors must always be present for effective sterilization.

In the presence of moisture, bacteria are destroyed at much lower temperatures than when moisture is absent; therefore moist heat is a more effective and efficient sterilizing agent than dry heat. The main purpose of using steam under pressure, rather than atmospheric steam, is to attain higher temperatures. Pressure alone has no value in destroying microbial life. Atmospheric or "non-pressure" steam has a maximum temperature of 212°F. Saturated steam at 250°F has a pressure of 15 psi and can destroy

the most heat-resistant forms of microbial life within a brief exposure interval.

Most authorities agree that no living thing can survive 10 to 15 minutes of direct exposure to saturated steam at 250°F. It is the most reliable medium for sterilization because of its penetration power, ease of regulation, and economical operation.

The order of death in a given bacterial source, subjected to sterilizing process, is governed by definite laws of time and temperature. If the temperature is increased, the time may be decreased. The following table shows the relationship between time and temperature.

270° F (132° C) . . . . .	2 minutes
257° F (125° C) . . . . .	8 minutes
250° F (121° C) . . . . .	12 minutes
245° F (118° C) . . . . .	18 minutes

Minimum Standards for Steam Sterilization

### ELECTRICAL CONTROL SEQUENCE (See figure 8 and 14.)

All electrical parts return to an AC "common". Therefore, only the hot or "AC" line is traced here. NC or NO refers to contacts "normal closed" or "normal open". Initially, steam and water supplies are turned on and the IRC is set for the desired sterilization temperature. If condenser exhaust is used, the solenoid valve is energized at all times except when the operating handle is set at OFF position (see figures 6 and 7).

For a slow exhaust sterilizing cycle, proceed as follows:

1. Set the SELECTOR to SLOW EXH and set the operating handle to STER.
2. AC through S3-35, C5-NC, T<sub>1</sub>-NC, to red pilot.

3. Red ("steam") pilot lights.
4. At set temperature, thermostat Th<sub>1</sub> closes (mercury switch in figure 12).
5. AC through Th<sub>1</sub> to timer clutch and through C2-NC, C3-NC, T<sub>2</sub>-NC, to timing motor and clear pilot.
6. Timing begins; clear ("timing") pilot lights.
7. Time ends; T<sub>1</sub> to NO, red light goes out.
8. AC through S3-35, C5-NC, T<sub>1</sub>-NO, C<sub>1a</sub>-NO to valve motor. Yellow ("exhaust") pilot lights.

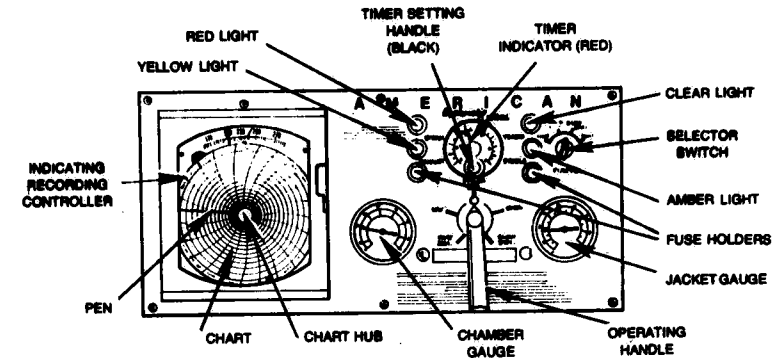


Figure 6. Cyclomatic Control Panel

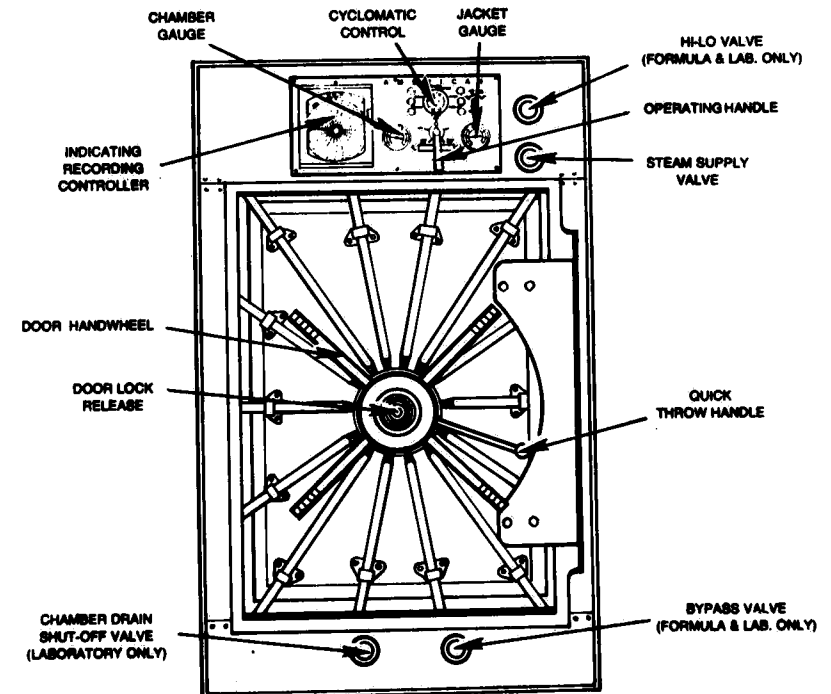
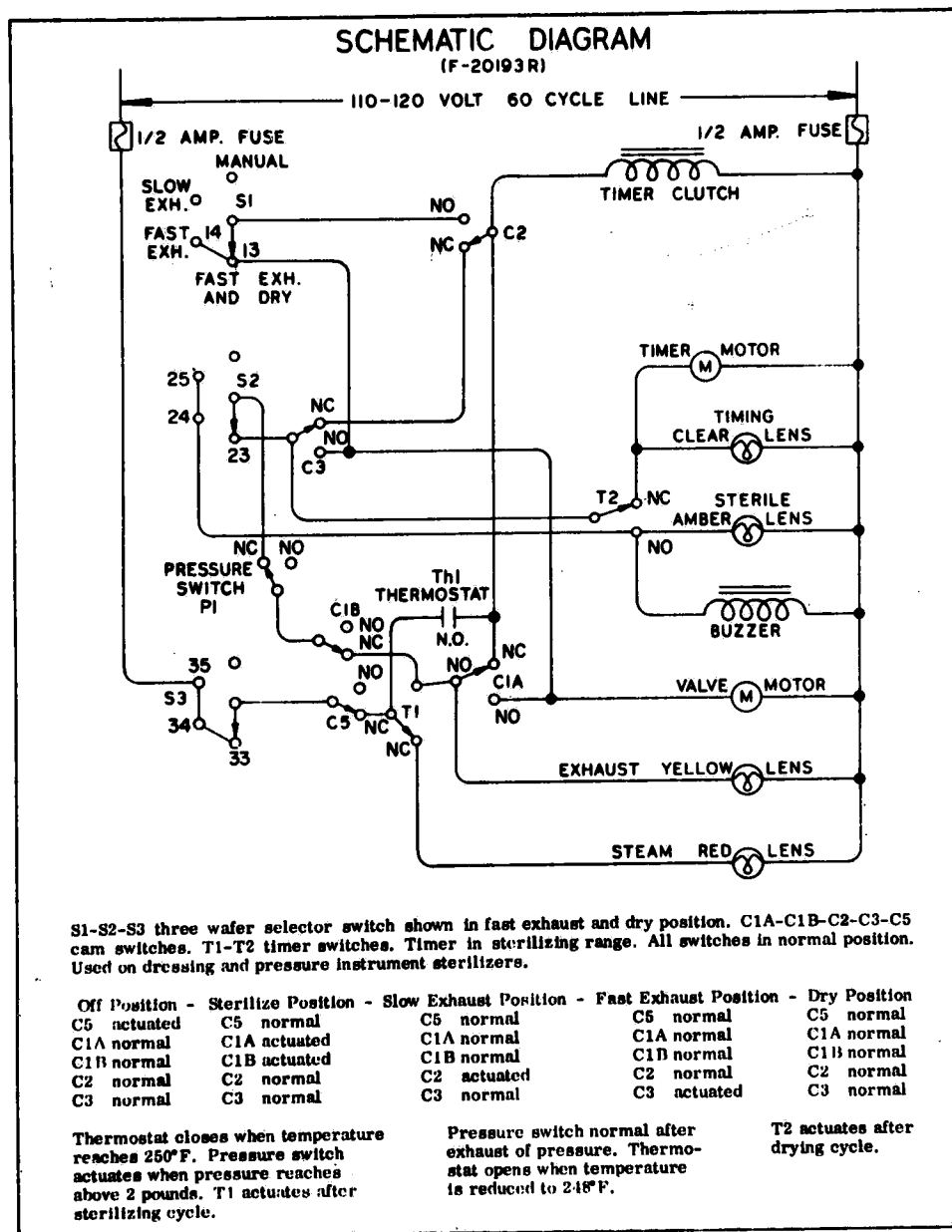
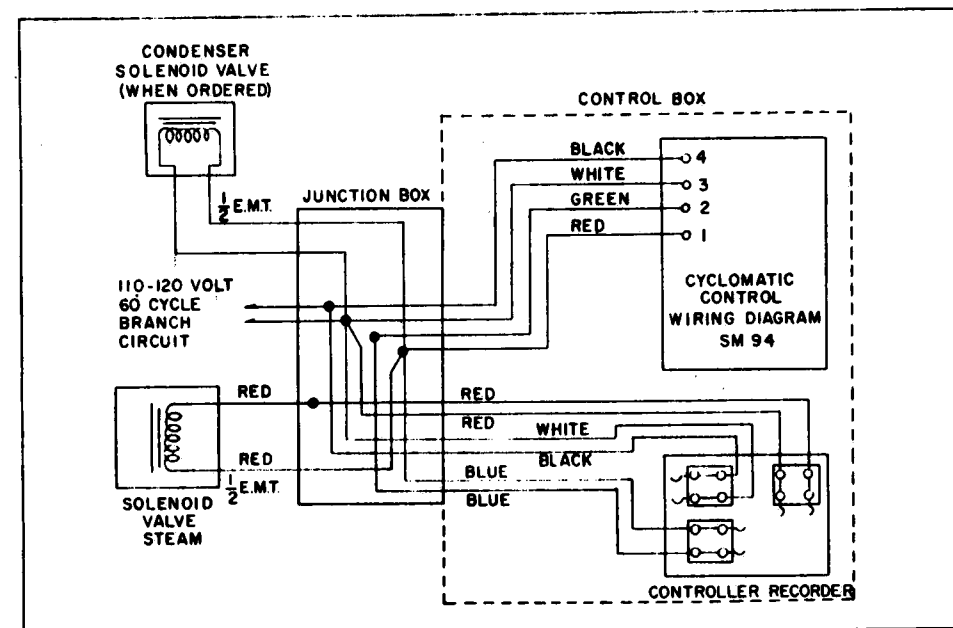


Figure 7. Sterilizer Controls



**Figure 8. Control Schematic Diagram**



**Figure 9. Isothermal Control Schematic Diagram**

9. Valve motor moves operating handle to SLOW EXH (C<sub>1a</sub> to NC, C<sub>1b</sub> to NC, C2 to NO). Timer resets; clear light goes out.
10. When pressure drops to 2 psi, P1 closes to NC.
11. AC through T<sub>1</sub>-NO, C<sub>1b</sub>-NC, P1-NC, S2-25 to amber pilot and buzzer.
12. Amber ("sterile") pilot lights, buzzer sounds.
13. Turn the operating handle manually to OFF.

**For a fast exhaust sterilizing cycle, proceed as follows:**

1. Set the SELECTOR to FAST EXH and set the operating handle to STER.

**Steps 2 through 9 are identical to above.**

10. AC through T<sub>1</sub>-NO, C<sub>1a</sub>-NC, C2-NO, S<sub>1</sub>-14 to valve motor.

11. Valve motor moves operating handle to FAST EXH (C2 to NC, C3 to NO).
12. When pressure drops to 2 psi, P1 closes to NC.
13. AC through T<sub>1</sub>-NO, C<sub>1b</sub>-NC, P1-NC, S2-24 to amber pilot and buzzer.
14. Amber ("sterile") pilot lights; buzzer sounds.
15. Turn the operating handle manually to OFF position.

For a fast exhaust and dry sterilizing cycle, proceed as follows:

1. Set the SELECTOR to FAST EXH and DRY and set the operating handle to STER.

Steps 2 through 12 of above FAST EXH cycle are identical.

13. AC through T<sub>1</sub>-NO, C<sub>1b</sub>-NC, P1-NC, S2-23, C3-NO to valve motor, timer, and clear pilot.

14. Timing begins; clear ("timing") pilot lights. Valve motor moves operating handle to FAST EXH and DRY (all switches normal, C3 to NC).

15. Time ends, T2 moves to NO.

16. AC through S2-23, T2-NO to amber pilot and buzzer.

#### STEAM SEQUENCE (See figure 10.)

##### Heating.

Steam enters the sterilizer piping through the strainer when steam valve is open. It passes through a control valve where pressure and temperature are regulated. It then flows into the top of the steam jacket to heat the chamber. Steam leaves the jacket through a bottom nipple, strainer, and steam trap when only dry heat is wanted. It goes to the steam return system through a check valve.

##### Sterilize.

When the operating valve is set to STER, steam leaves the jacket through the multi-port valve, passing through a nipple to enter the steam chamber. As pressure builds up in the top of the steam chamber, it compresses air beneath it, forcing air out through the strainer. In this way, air is eliminated from the chamber to increase effective temperature. Any air trapped in the chamber reduces temperature, even though pressure is high.

Steam leaves chamber through a thermostat fitting and is monitored at that point for sterilizing temperature for which the control valve is adjusted. The steam then passes through a steam trap as condensate to flow out through a check valve. Vapors pass upward through the exhaust drain tube to atmospheric exhaust, while liquids pass through the float trap and into the drain.

##### Slow Exhaust (For Liquids.)

When the operating valve is set to SLOW EXH, steam leaves chamber through the same path as above during sterilizing period. At end of timed sterilization period, exhaust is restricted by small orifices in the operating valve (see operating valve, figure 21). This slows the exhaust to drop chamber pressure over a longer period of time.

17. Amber ("sterile") pilot lights, buzzer sounds.

18. Turn the operating handle manually to OFF position.

The electric circuit is opened when the operating handle is set at OFF position (C5 to NO). The electric circuit is also dead when the SELECTOR is set to MANUAL (S3 open).

##### Automatic Solution Exhaust.

When the solution exhaust system is added, the slow exhaust period is shortened, while still providing safety for sterilized liquids. Steam exhausts slowly through both the slow exhaust path above and through a nipple and solution control valve. It passes from there through tubing directly to the condenser or atmospheric vent. The solution control valve allows steam to trickle through until pressure drops to 4 psi. Then it opens to speed the exhaust. At 4 psi, pressure is low enough that sterilized solutions will not spill due to sudden loss of pressure.

##### Fast Exhaust (For Utensils.)

When the operating valve is set to FAST EXH, steam passes through a large orifice to enter the exhaust pipe. Steam pressure drops quickly as it passes out the atmospheric exhaust, while condensate drains into the funnel to pass into the drain.

##### Fast Exhaust and Dry (For Surgical Packs and Wrapped Supplies.)

When the operating valve is set to FAST EXH and DRY, steam exhausts through a nozzle and venturi tube in the valve. This produces a sharp pressure drop, pulling a vacuum on the steam chamber through the nipple. Air then enters the chamber through a vacuum dryer and strainer. A continuous stream of air flows in this path and out the nipple, drying the steam chamber and its contents. The jacket is maintained at heat due to the vacuum-forming steam. Thus it aids in the drying process.

##### Condenser Exhaust (See figure 11.)

All steam paths are the same for condenser exhaust as they are for atmospheric exhaust, except for final cooling and venting. The condenser exhaust system slants steam downward through a nipple. This causes even unobstructed steam flow into the condenser. Here a fine spray

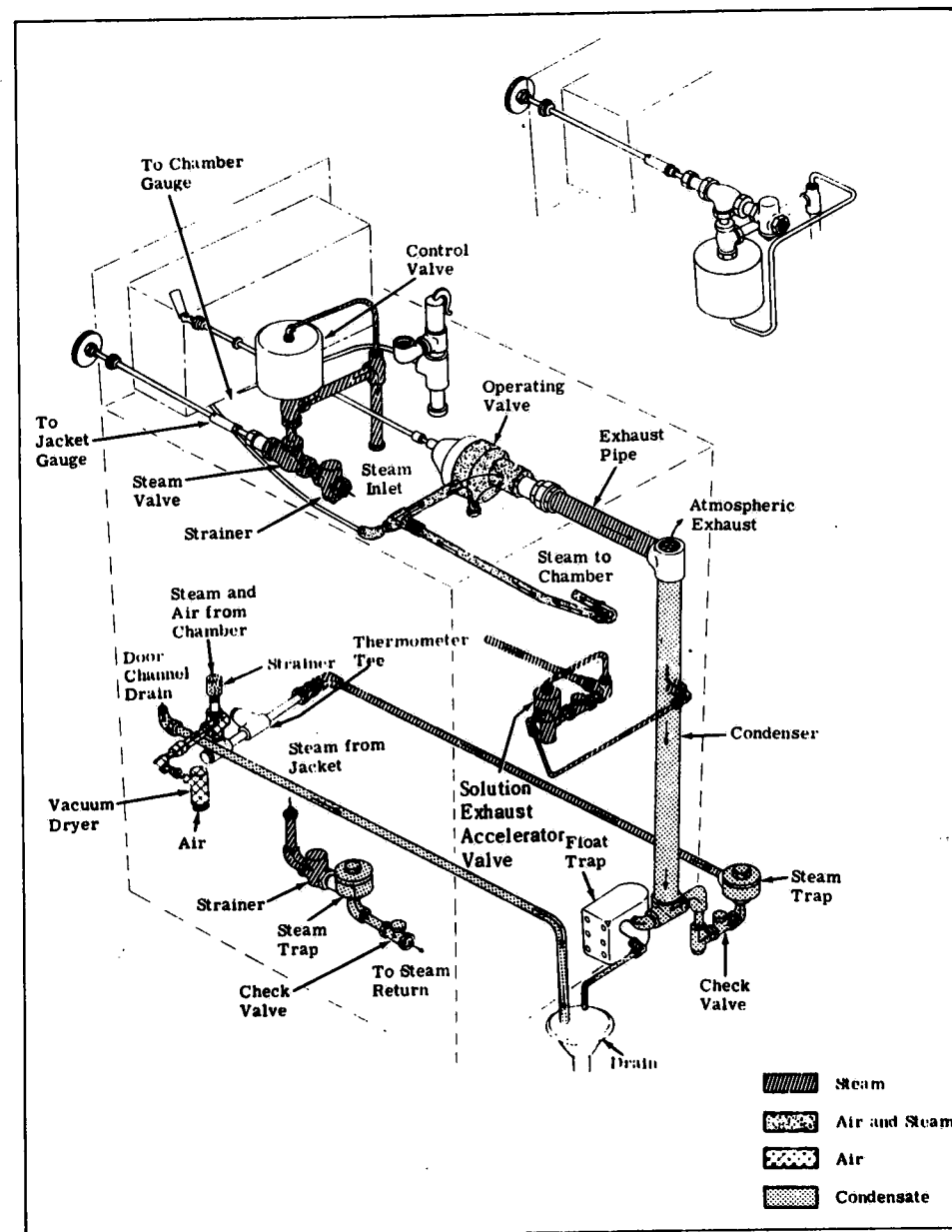


Figure 10. Piping Schematic. Flow Diagram with Atmospheric Exhaust

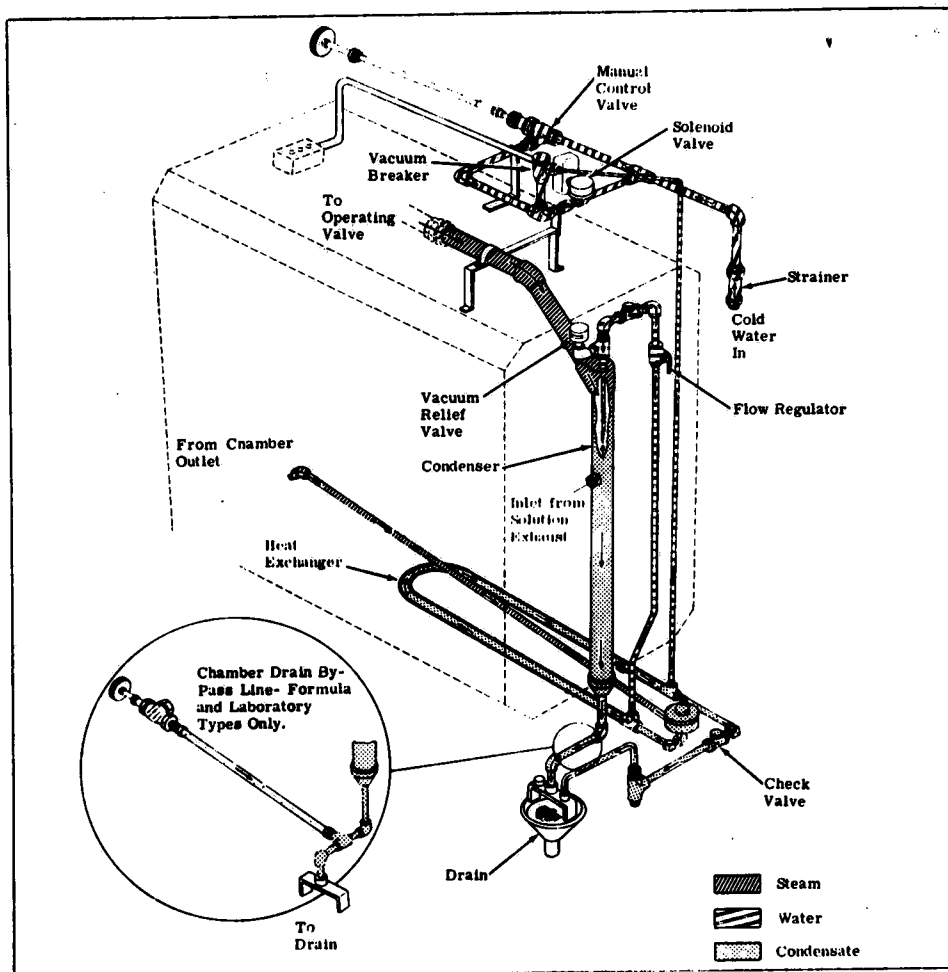


Figure 11. Piping Schematic. Flow Diagram with Condenser Exhaust

of water cools the steam, condensing it, and the water flows to drain.

Cold water enters the system through the strainer and is turned on by either the manual control valve or automatic solenoid valve. It flows downward through tubing and the outer tubing of heat exchanger. It then flows upward through the tubing to be controlled by a flow regulator. This valve is adjusted for a minimum

flow to conserve water because very little volume is needed in the condenser spray. Note the vacuum breaker at the highest point in the water line, and also the vacuum relief valve. These valves aid water flow. Their purposes and operation are explained in Chapter VII.

The heat exchanger aids in cooling chamber drain line steam, the condensate passes to the drain through check valve.

## CHAPTER VI TROUBLE SHOOTING

A clear understanding is the shortest path to quick and efficient service. Before the serviceman can analyze symptoms of a malfunctioning sterilizer, he must be fully aware of what must occur in each step of operation. Only then can he see what cycle is skipped or what happens that should not occur. Read carefully the discussion of theory of operation in

Chapter V and know the Operating Instructions of Chapter III before starting the trouble shooting procedure. This chapter provides a list of possible troubles together with symptoms and method of repair. Make notes in the back of this manual of any new symptoms and troubles to be added to this list. It can be helpful in future trouble shooting.

### TROUBLE SHOOTING CHART

FAULT	POSSIBLE CAUSE	REMEDY
Steam pressure low, high, erratic, or zero.	1. Steam supply less than 35 psi minimum.	1. Increase steam supply pressure.
	2. Steam valve defective.	2. Repair steam valve.
	3. Steam control valve sticking.	3. Repair steam control valve.
	4. Steam trap clogged or stuck open.	4. Overhaul steam trap.
	5. Door leaks.	5. Tighten handwheel, add shims under fulcrum blocks or replace door gasket.
	6. Pressure gauge error.	6. Calibrate with pointer setscrew or replace gauge.
Timer does not start.	1. Temperature too low.	1. Increase steam supply pressure.
	2. Timer OK, clear pilot bulb defective.	2. Replace pilot bulb.
	3. Mercoid switch defect.	3. Replace switch in indicating and recording controller.
	4. Loose electrical connections.	4. Check wiring for loose connection or break.
	5. Defective timer.	5. Replace timer.
	6. Defective L.R.C.	6. Replace L.R.C.
Timer starts too early or too late.	1. Mercoid switch adjustment not correct.	1. Set the screw adjustment on magnet arm for correct temperature.
	2. Timer cam slipped.	2. Reset cam and tighten.
Timer runs slow or stops.	1. Loose connection in 110v supply to clock.	1. Check for loose or broken wiring.
	2. Defective timer.	2. Replace timer.
	3. Recycling due to low steam pressure.	3. Increase steam supply pressure.



# TROUBLE SHOOTING CHART (CONTINUED)

FAULT	POSSIBLE CAUSE	REMEDY
Timer recycles.	1. Variable or low steam pressure.	1. Correct steam pressure. Also see above.
	2. Loose wiring.	2. Check wiring for loose connections or breaks.
	3. Bad switch contacts.	3. Clean or replace C5, S3, or Mercoid switches.
Water in steam chamber or door channel.	1. Poor drainage.	1. Mix 3 tablespoons trisodium phosphate (tech. grade) in a pint of water. Pour in steam chamber drains. Build steam pressure to rinse. Flush with cold water.
	2. Plugged screen in chamber drain.	2. Remove screen and clean thoroughly.
	3. Steam trap does not open for water.	3. Overhaul steam trap.
	4. Steam not "dry".	4. Supply dry steam.
Noise in sterilizer.	1. Water carry-over.	1. Clean drainage system (see above) and provide "dry" steam.
Steam comes out condenser exhaust.	1. No water spray in condenser.	1. Water supply off. Check supply line, solenoid valve, and flow regulator.
Steam comes out vacuum dryer.	1. Vacuum dryer clogged and inoperative.	1. Overhaul vacuum dryer.
Solution exhaust very slow operation.	1. Solution Exhaust Accelerator Valve inoperative.	1. Adjust or repair valve. Replace valve.
Slow exhaust is too fast. Solutions pop caps and spill.	1. Solution Exhaust Accelerator Valve open.	1. Adjust or repair valve. Replace valve.
Heat exchanger over-heats.	1. No water in exchanger.	1. Check water supply, valves in water line, vacuum breaker, and vacuum relief valve.
No Cyclomatic control.	1. No AC power.	1. Check supply line and fuses.
	2. Cam snap switches damaged or defective.	2. Replace cam snap switches. Make sure ratchet is working properly.
No buzzer. Amber light OK.	1. Defective buzzer.	1. Replace buzzer.
Pressure high, temperature low.	1. Air trapped in chamber due to clogged strainer or drain.	1. Clean strainer in front, bottom of chamber. Clean drains.

## CHAPTER VII

### COMPONENT REPLACEMENT

Sterilizer instruction sheets provide hospital personnel with some maintenance and adjustment information. However, they advise against major repair, particularly to control equipment. The AMSCO serviceman is called for all but minor troubles. He should go well prepared with parts and information, as well as an adequate set of tools.

Use tact and patience to question the customer about sterilizer troubles. List the symptoms described by him and analyze the problem before starting repairs. This can save time and trouble for the serviceman and build customer confidence. Know the sterilizer functions and know sterilization procedure. See Chapter V of this manual for theory of operation, and read the Operating Instructions given in Chapter III.

The silicone spray used on door gaskets is an excellent rust inhibitor. After each service call, spray tools and wipe lightly before storing in tool case. This protects against rust and keeps tools clean and in good condition.

This chapter provides instructions for repair, overhaul, and replacement of major parts. Exploded drawings of these parts are in the parts list section at the back of this manual. Refer to the particular part to be serviced unless a general overhaul is to be done.

Inspect the unit carefully before starting work. Look for obvious breakage or damage, and make a list of things to be done. If the unit is usable, run through a short cycle of operations.

As an aid to analyzing trouble, a Trouble Shooting Chart is included in Chapter VI.

### REPAIR OF RECORDER

The recorder chart (figure 31) is driven by an electric clock and turns continuously. Once set, the recorder pen should indicate correct time. The pen records Surgical Supply and Formula sterilizer chamber temperature on chart calibrated in degrees Fahrenheit (°F). The chart for Labsterilizers is calibrated in degrees Centigrade (°C). Steam pressure is directly proportional to temperature.

The thermometer system consists of a helical pressure element connected by a flexible capillary tube to a metal bulb on the sterilizer chamber. The bulb, tubing, and pressure helix form a sealed pressure which is factory-filled with fluid. Temperature changes cause bulb pressure changes which cause the helix to coil or uncoil, moving the pen. Permanent damage results if this sealed pressure system is opened or broken.

The pen must be cleaned frequently to prevent trouble. Only a clean pen can trace a clear record. The pen holds more than enough ink

for one complete chart revolution. However, it is wise to refill the pen every time the chart is changed. Use a dropper to fill the pen. If it fails to form an ink trace on the chart, try touching the pen capillary tube with a moistened finger. If this fails, ink has probably dried in the pen. Pull the pen off the pen arm and squeeze between thumb and finger, with a finger over the end of the pen. Then dip end of capillary tube in ink and release finger pressure.

After long disuse it may be necessary to remove the pens and wash in alcohol, ammonia, or very hot water. If necessary, boil pen in water for a few minutes. Use the pen cleaner wire supplied with the recorder to dislodge hardened ink. Replace the pen by pushing all the way on the forked end of the pen arm.

When it is necessary to change the chart paper, open the recorder door and push the pen lifter down to hold the pens away from the chart. Unscrew the hub cap and slip off the old chart paper. Slip a new chart over the hub and

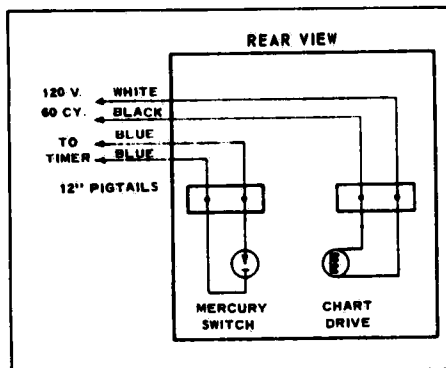


Figure 12. Wiring Diagram for Indicating and Recording Controller

under the slot in the chart plate. Turn the chart by hand until the pens rest on the proper time arc. Install and tighten the hub cap.

The recorder may be removed for service, but this is usually not necessary. Remove the three screws which fasten the recorder to brackets at the rear of the control panel. Remove the

bulb from the sterilizer, and roll capillary tube in an eight inch roll. Use care to prevent damage to the tube and bulb. Tape them to the back of the recorder for safety. Then slide the recorder out the front panel after releasing electric wires.

If the chart drive fails, remove the four screws and back of the recorder. With an AC voltmeter, measure for 110 volt AC at the clock terminals. If there is no voltage indication, check for an open fuse or loose connection. If voltage is correct, turn off the 110 volt AC supply to the sterilizer. Remove the Haydon Timer and replace. Common replacement parts for the Bristol recorder are listed at the back of this manual.

To replace the Mercoid switch, remove four screws which hold the back plate on rear compartment of case. Disconnect two green wires from the terminal block. Remove three screws which hold the dial plate and remove the plate. Remove the Mercoid switch from straps and handle with EXTREME CARE. Install a new switch in the straps, using a spot of varnish to hold it secure.

Figure 12 shows the wiring diagram for the indicating and recording controller. Refer to the wiring diagram figure 13 to see how this unit connects into the control circuitry.

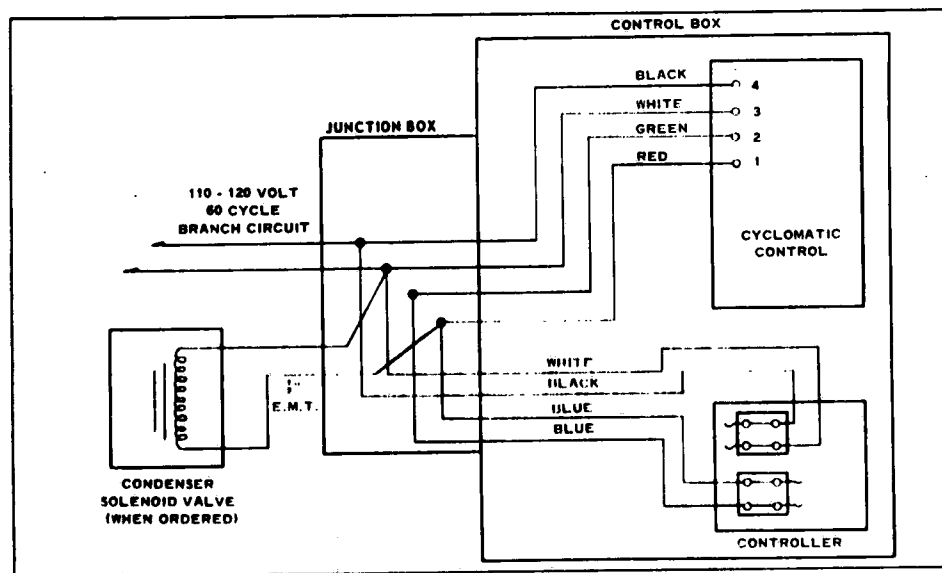


Figure 13. Wiring Diagram - for Sterilizer

## REPAIR OF STEAM CONTROL VALVE

All steam sterilizers are equipped with adjustable steam pressure regulators. They are factory adjusted to supply 15-17 psi. The HI-LOW valve is identical with the preset steam control valve in operation and in common parts. The HI-LOW valve substitutes a panel control knob in place of a fixed adjustment screw in the preset valve. The pressure is fixed on Surgical Supply units, but is variable in the HI-LOW valve on Lab and Formula sterilizers. Full counter-clockwise rotation of the HI-LOW panel knob provides 5-7 psi pressure, and full clockwise provides 15-17 psi.

Pressures must be correct within 2 psi. Check temperature recording charts which show recent control patterns; they will indicate the presence of poor pressure control. If pressure regulation becomes erratic, the valve should be repaired.

### 1. Disassembly (See figure 19.)

a. Remove two screws (1), four screws (3), and cover (2).

b. Unscrew and remove reinforcement (4), and remove bellows (5).

c. Remove the top spring plate (6) and spring (7).

d. Remove the bottom spring plate (8).

e. Remove two cotter pins (9), and pivot pin (10), and the fork assembly (11).

f. On the pre-set valve, remove the indicator sleeve (12), and pressure adjust screw (13).

g. On the HI-LOW valve, remove handwheel (20), wheel nut (21), hex nut (23), finishing collar (22), setscrew (26), extension rod (24), and coupling (25).

h. On the HI-LOW valve, remove screws (31), cover (30), setscrews (29), and adjusting screw (27). Lift out locknuts (28) after removing adjusting screw.

i. Remove screw (18) and lift off bottom plate (19).

j. Unscrew and remove the bonnet and sylphon assembly (17). Remove stem assembly (16).

k. Unscrew and remove the seat (15) from the valve body (14).

### 2. Inspection and Replacement.

Clean the valve components, removing mineral deposits as necessary. Examine the bellows (5) and bonnet and sylphon assembly (17) for cracks. If damage is suspected, place in boiling water to expand, and again examine. Check the valve seat (15) and stem assembly (16) for unmarred seating surfaces; replace if scratched or worn. Examine all other parts for wear and damage. Replace all parts which are doubtful or can not pass inspection.

### 3. Reassembly.

Reassemble the valve in reverse order of disassembly. Make sure the valve seat (15) is tight against body shoulder. Handle bellows and sylphon assembly gently to avoid damage. Screw reinforcement (4) lightly against bellows top, to be adjusted later.

### 4. Adjustment.

Install a thermometer in the tee below the front of the sterilizer. Make all adjustments for pressure of 15-17 psi at 250-254°F. For pressure of 5-7 psi, use temperature of 228-233°F.

To set the coarse range of the valve, remove screws (1) and turn reinforcement (4). Turning the reinforcement away from the bellows lowers the pressure; turning toward the bellows raises the pressure. When this pressure is correctly set, the pressure adjust screw (13) shows correct pressure on the indicating sleeve scale (12). This adjustment permits centering of the operating range for the HI-LOW valve.

On the preset valve, turn valve screw (13) clockwise to increase pressure and counter-clockwise to lower pressure. Adjust slowly, in steps, and wait for pressure to stabilize after each setting. Panel jacket gauge should indicate 20-22 psi and regulation should hold within 2 psi of this range for 250-254°F sterilization in chamber.

For the HI-LOW valve, loosen setscrews (29) and adjust lock nuts (28). Turn the handwheel

counterclockwise for 5-7 psi pressure and set the lock nut against the bottom plate front shoulder. Turn the handwheel clockwise to 15-17 psi and set the second lock nut against the

bottom plate rear shoulder. Tighten the setscrews to hold the lock nuts in place when adjustment is complete. Attach the cover plate after the lock nuts have been fastened.

## REPAIR OF STEAM VALVE

### REPAIR OF STEAM VALVE

1. Disassembly (See figure 20.)
  - a. Remove setscrew (7), extension rod (5) and the coupling (6).
  - b. Remove the packing nut (8) and packing gland (9).
  - c. Remove the bonnet nut (11).
  - d. Place the handwheel loosely on the valve stem and rotate to remove stem from threads. Remove the handwheel.
  - e. Pull out stem (13); remove valve bonnet (12), and packing (10).
  - f. Remove the disc holder assembly (14).

- g. Examine valve seat (16) and, if damaged, remove from valve body (19).

#### 2. Inspection and Replacement.

Clean and inspect the valve parts. Look for wear and cracks in the stem, disc holder, and valve seat. Replace packings (10) and Teflon disc (14). Replace other parts which appear to be worn or damaged.

#### 3. Reassembly.

Reassemble the valve in the reverse order of disassembly. Make sure the disc holder assembly turns freely on the end of the stem. Install new packings (10) and force into place with the packing gland. Tighten the bonnet nut (11) enough to secure the packings against leakage. Do not tighten excessively or the valve will be hard to operate.

### REPAIR OF OPERATING VALVE (See figure 21.)

Wear in the seat of the operating valve may cause leakage between the valve ports. Accumulation of rust or deposits can also cause this condition. Either case can result in erratic heat and pressure, and may cause the sterilizer to recycle. The only remedy is in repair of the operating valve.

1. Disassembly.
  - a. Remove the two Allen screws (1) and the coupling (2).
  - b. Clamp the valve in a soft jawed vise and use a pipe wrench to remove the ejector (13).
  - c. Remove valve from vise and take out five hex screws (3).

- d. Tap the bonnet (4) to break seal with the body (11). Use caution; spring pressure may cause sudden scattering of internal parts.

- e. Remove washer (5), stem (6), and spring (7).

- f. Remove the fork (8) and seat (9).

- g. Scrape off and discard the gasket (10).

- h. Use a 3/4-inch hex socket wrench to remove the nozzle (12) from the body (11).

#### 2. Inspection and Replacement.

Clean the valve components, removing rust and mineral deposits as necessary. Be very careful

to avoid scratching the mating surfaces of the seat (9) and the body (11). This surface must be clean, flat, and polished. Examine it carefully for the slightest sign of wear, scratches, and uneven surface. The seat should be between 0.670- and 0.700-inch thick on all edges. Replace the seat if any defect appears.

Check the spring (7) for good pressure when compressed to 1-3/8-inch long. Examine fork (8) and make sure the two pins are solid and not bent or worn. Check the matching holes in the seat for fit with the fork.

Inspect the nozzle (12) and ejector (13). The inner surfaces may be lightly buffed with crocus

cloth to remove slight rusting or deposits. The contours of these surfaces are critical and must not be altered by deposits or buffing. Replace either or both if damaged.

#### 3. Reassembly.

Reassemble in reverse order of disassembly. Wipe a thin, even coating of graphite on the seat and body mating surfaces before joining. Apply graphite to fork pins. Install a new gasket (10). Tighten hex screws (3) to secure against steam leakage. Retighten after first heating of valve.

## REPAIR OF SOLUTION EXHAUST ACCELERATOR VALVE

The solution control valve should open at 4 psi  $\pm 1$  psi to accelerate steam chamber exhaust. Above 4 psi, the valve-top pilot-effective pressure is nearly equal to steam pressure at the lowest port. The valve remains nearly closed and little steam can escape through the upper side port. At 4 psi, spring pressure plus steam pressure add to overcome pilot pressure. The valve opens, releasing steam and shortening exhaust time.

Excessive delay in solution exhaust is due to faulty control of this valve and may be due to rust or sediment in the valve. The recording chart should show a slow and gradual pressure drop to 4 psi on SLOW EXHAUST. At 4 psi the chart should show a sudden pressure drop to zero. If the valve sticks in the open position, chamber pressure may be low and erratic. In either case, the valve must be repaired.

#### 1. Disassembly.

- a. Remove valve cover (1) and gasket (2). Discard the gasket.

- b. Carefully remove the syphon assembly (3) and the needle valve (4).

- c. Remove the valve cap (7) and gasket (8). Discard the gasket.

- d. Remove plug (9), spring (10), and pilot (11).

- e. Use a 1-1/8-inch hex socket wrench to remove valve seat (5) and gasket (6) from valve body (12). Discard the gasket.

#### 2. Inspection and Replacement.

Clean the valve parts and remove rust or deposits. Do NOT scrape syphon; handle it with care and examine for cracks in bellows. Dip in boiling water to expand, and recheck carefully for cracks or holes.

Buff the needle valve (4), seat (5), and pilot (11) with crocus cloth. Use care to avoid removing surface metal; just polish and remove foreign matter. Examine these parts for wear or damage and replace as needed. Make sure they fit together without sticking. Check spring (10) for sufficient pressure.

#### 3. Reassembly.

Reassemble the valve in reverse order of disassembly. Install new gaskets (2, 6, and 8). Screw plug (9) lightly against the spring, to be adjusted later. Handle the syphon with care to avoid damage.

#### 4. Adjustment.

Remove valve cap (7) to prepare for adjusting plug (9). Apply chamber steam pressure and set the OPERATING HANDLE at SLOW EXHAUST. As pressure drops near 4 psi, turn plug (9) clockwise very slowly until valve suddenly opens. Repeat this action several times to be sure valve opens at 4 psi  $\pm 1$  psi every time.

#### OVERHAUL OF VACUUM DRYER (See figure 23.)

The vacuum dryer permits air to be pulled into the sterilizer chamber through a sterile filter during the exhaust phase. It should prevent steam escape when pressure is applied. It may become clogged and sluggish if the sterilizer has been used for greasy or gummy substances (such as vaseline). This condition is indicated by steam leakage from the dryer. When this occurs, overhaul and cleaning is necessary.

##### 1. Disassembly.

- a. Remove the plug (2) and gasket (3). Discard the gasket.
- b. Lift out the ball (4) which is on top of the air inlet tube.
- c. Use a pointed tool to unscrew and remove nut (5).
- d. Lift out and discard the monel wool cartridge (6).
- e. Remove screen (7).
- f. Remove screw (8), lockwasher (9), and cup (10) from housing (11).

#### OVERHAUL OF VACUUM RELIEF VALVE (See figure 24.)

Steam condensation in the condenser exhaust causes sudden reduction of pressure. If a vacuum forms, it can prevent proper drainage. With water pressure off, the vacuum breaker permits air inlet to the water nozzle of the condenser to break the vacuum. This prevents siphoning beyond the flow regulator valve. Water pressure normally seals the valve against leakage from the air orifice, unless there are defective parts in the valve. If the valve leaks, or if drainage problems occur, overhaul the vacuum relief valve (see also the vacuum breaker).

##### 1. Disassembly (See figure 24.)

- a. Remove the top plug (1) and gasket (2).
- b. Lift out the valve head assembly, items 3, 4, 5, and 6.
- c. Remove disc screw (6) and washer (5).

##### 2. Inspection and Replacement.

Thoroughly clean all parts in cleaning solvent; air dry with a low pressure air hose. Wipe with lint-free cloths. Inspect the ball and its seat on the air inlet. Buff lightly with crocus cloth to remove deposits and improve polish. If pitted or uneven, replace ball and reseal the tube. Buff the nut (5) and screen (7) to remove all residue and rough spots. Note whether name plate (1) is in place and legible. If not, replace it.

##### 3. Reassembly.

Reassemble the vacuum dryer in reverse order of disassembly. Install a new monel wool cartridge. Do not use more than 1/2 oz. of wool or the filter may be too dense. Install a new gasket (3) and tighten plug (2) securely against leakage.

The wool is sterilized by steam during the first sterilization operation. It is then safe for sterile exhaust steps.

Be sure to install the vacuum dryer in a VERTICAL position with the cup (10) at the bottom. If it is sloped, or upside down, the ball cannot seat properly and trouble will result.

- d. Separate valve head (3) and disc (4). Discard the disc.

##### 2. Cleaning and Replacement.

Clean rust and sediment from all parts of the valve. Make sure the valve head moves easily in the hollow in the top plug. Buff with fine emery cloth to remove any roughness causing binding. Inspect for cracked or broken parts, and replace as necessary.

##### 3. Reassembly.

Replace the disc (4) with a new one and reassemble the valve in reverse order of disassembly. Replace gasket (2) only if necessary. Test operation while condenser exhaust is in use by placing thin paper near the valve orifice. Air intake should pull the paper against the valve.

#### OVERHAUL OF VACUUM BREAKER (See figure 25.)

The vacuum breaker is in the Condenser Exhaust water supply line, following the manual and solenoid valves. Its purpose is to prevent siphoning water from the heat exchanger after the valves are closed. Water pressure against the float holds the air inlet closed, permitting normal water flow. When the manual and solenoid valves are closed, gravity continues to move water in vertical piping, forming a vacuum. When water pressure is off, the vacuum breaker float drops and the air orifice opens to break the vacuum. Water then finds its lowest level in the piping, filling the heat exchanger. The vacuum relief valve operates with the vacuum breaker to prevent siphoning beyond the flow regulator valve.

##### 1. Disassembly.

- a. Unscrew and remove the bonnet assembly (1).
- b. Remove the friction ring (2) and air valve seat (3).

#### OVERHAUL OF SOLENOID VALVE (See item 8 figure 15 and item 7 figure 17.)

Solenoid valve erratic action may be due to a defective coil or worn valve seat. Test AC voltage at the coil terminals during operation. If 110 volts to 120 volts are measured at that point, action of the valve should be positive. If valve hums loudly and is sluggish, the solenoid coil is probably defective and should be replaced.

A damaged or worn seat cannot be repaired; the valve must be replaced if it leaks. When replacing valve, be very careful to observe proper

- c. Remove the assembled float and ballast (5).

- d. Remove the ballast from the float.

##### 2. Inspection and Replacement.

Clean all rust and sediment from the valve. Clean the drain holes in the float and ballast and inspect plastic for breaks or leaks. Replace parts where necessary. The friction ring and air valve seat should be replaced if not in perfect condition.

##### 3. Reassembly.

Reassemble the valve in the reverse order of disassembly. Be sure the reassembled float moves freely in the valve body. Test the valve for leakage when in service. No water leakage at the bonnet is tolerated. Check for air inlet with water pressure off.

flow direction which is indicated by flow arrow stamped on body. A reversed valve cannot operate properly.

To replace a solenoid coil, disconnect the terminal wires and remove the top screw and cover. Lift off the coil and salvage any shim material around the pole piece. Shim must be replaced in new coil or vibration noise will occur. Slip new coil in place and shim so it fits tightly on the pole piece.

#### OVERHAUL OF FLOW REGULATOR VALVE (See figure 26.)

The flow regulator valve in the condenser exhaust line is always adjusted for minimum water flow. Very little water is required to cool the steam in the condenser. If the valve becomes worn and is leaking, overhaul it as follows:

##### 1. Disassembly.

- a. Loosen packing nut (3).

- b. Remove stop screw (1) and turn the valve stem (2) counterclockwise to unscrew and remove.

- c. Remove the packing nut (3) and packing (4). Discard the packing.

##### 2. Cleaning and Replacement.

Clean all rust and sediment or deposits from valve. Buff the point of the stem with crocus cloth and examine for wear or damage. Examine valve seat in body (7) and buff smooth.

##### 3. Reassembly.

Replace with new valve packing (4) and reassemble in reverse order of disassembly.

### OVERHAUL OF FLOAT TRAP (See figure 27.)

#### 1. Disassembly.

a. Remove the six hex screws (1) which hold the cover (2) on the body (14); remove the cover (2), and gasket (3). Do not discard the gasket unless it is damaged.

b. Remove two retaining pins (16), pivot pin (17), and the head and float arm assembly (11). Catch the ball (18) to avoid dropping and losing it.

c. At this stage of disassembly, the float trap can be cleaned and inspected. Further disassembly is necessary only if parts are to be replaced.

#### 2. Cleaning and Inspection.

Thoroughly clean the float trap and remove all rust or sediment. Check all parts for excessive wear. The ball and seat may be buffed with crocus cloth if rough or pitted. If parts are broken or badly worn, replace the entire trap and salvage the old unit for rebuilding.

#### 3. Reassembly.

Reassemble in the reverse order of disassembly. Make sure the float arm and ball are seated properly and that the arm moves freely on the pivot. Test for water leakage after re-installing.

### OVERHAUL OF STEAM TRAP (See figure 28.)

The steam trap is in the steam return line to control steam temperature and pressure. Thermostatic action of the diaphragm closes the valve at high temperatures and restricts steam flow at lower temperatures.

The trap may fail if rusted or encrusted with mineral deposits. It should be cleaned at regular intervals if such crusting is found. It is not necessary to remove the trap from the Sterilizer for overhaul. Proceed as follows:

#### 1. Disassembly.

a. Unscrew and remove cap (1) and Diaphragm Assembly (2).

b. Unscrew the Diaphragm Assembly (2) from cap (1).

c. Use a hex socket wrench to unscrew and remove the seat (3).

#### 2. Cleaning and Inspection.

a. Scrape and clean the parts, but be careful with the diaphragm, seat, and pointed stem. The seat and stem may be smoothed with very fine sand paper, used cautiously. Wipe out the bowl after scraping and prevent scraps from entering the piping.

b. Test the diaphragm for flexibility. Dip it in boiling water and look for a noticeable expansion.

#### 3. Reassembly.

Reassemble the steam trap in the reverse order of disassembly. Install a new Diaphragm Assembly (2) if required. Make sure the pipe fittings are tight after assembly.

### REPLACEMENT OF CYCLOMATIC CONTROL PANEL PARTS (See figure 33.)

The fuse (15) and panel lamps (25) may be replaced without disassembly of the control panel. To replace a fuse, turn the fuseholder cap counterclockwise and pull out. Replace with a 1/2\* ampere, type 3AG, slow-blow fuse. To

replace panel lamps (25), simply unscrew the colored plastic caps of the lampholders (21 thru 24) to expose the bulb. Press on the bulb and turn slightly counterclockwise. The bulb pops out when bayonet pins release.

\* With condenser exhaust, use a 2 ampere fuse.

The panel must be removed to replace all other parts. Remove the two gauge glasses from gauges (4 and 5), the selector knob, the operating handle, take out five panel screws, and remove the lettered panel. Guard the panel finish against damage by storing in a protected place. Disconnect AC power lines to the sterilizer or remove line fuses (15). Do not remove the control chassis unless a major overhaul is needed. If chassis must be removed, disconnect pressure lines and the four prong connector plugs at the back of the control chassis. Also disconnect the shaft of the operating valve at the coupling just back of the chassis.

All panel components must be replaced if defective. Do not attempt to repair the parts.

### REPAIR OF DOOR ASSEMBLY (See figure 30.)

The door assembly may require repairs because of damage or continuous use over a long period of time. The following instructions will assure correct repair and prevent damage to door parts. Doors can be repaired without removal from sterilizer. Place screws and small items removed in a small box to avoid losing them. Wrap or protect polished and painted pieces when removed.

1. Disassembly for replacing defective door front end locking mechanism parts. Disassemble through steps below to replace the defective part(s) and reassemble in reverse order of disassembly.

a. Remove four screws (30) and lockwashers (31). Unscrew and remove the screw-box cap (29).

b. Pull off the handwheel hub (27) and remove the handwheel key (16). Hub and key come off together. Remove lubrication fitting (28) if damaged.

c. Loosen the three socket head screws (34) enough to allow the removal of defective radial arm(s).

d. Remove the three socket head screws (34), lockwashers (35), and pull off the top socket plate (25). Press out thrust bearing (21) only if it is to be replaced.

e. Pull off the bottom socket plate (23). Press out thrust bearing (21) only if it is to be replaced.

The timer (3), drive motor (2), and gauges (4 and 5) may be returned for overhaul of those units. Cam Switches (16) and Cam Assembly (20) of the operating handle should be replaced rather than filed or adjusted. This is the fastest and least costly way to service the control panel.

Refer to figure 33 to identify panel parts before removal and to assist in returning parts to their proper places after removal. Refer to the parts list for figure 33 for correct replacement part numbers.

See figures 13 and 14 for the wiring diagrams and figures 8 and 9 for schematic diagrams.

f. Remove two setscrews (19), unscrew and remove door post lock bushing (20), and pull off washers (17) and nylon thrust washer (18).

g. Unscrew and remove screw box (15).

2. Disassembly for replacing defective door back end locking mechanism parts. Disassemble thru steps below to defective part or parts. Replace the defective part(s) and reassemble in reverse order of disassembly.

a. Remove the twelve cover screws (1) and the diaphragm cover plate (2). Watch for and remove the diaphragm thrust plate (3).

b. Lift off the diaphragm (4), and remove and discard gasket (5).

c. Remove the clutch and rod lock assembly (6) and the clutch lock spring (7).

d. Pull out clutch lock (9) and remove the four clutch pins (8).

e. Remove setscrew (49) and hex nut (48). Slip off door stop (51).

f. Unscrew and remove the diaphragm support (10) and door post gasket (11). Discard the gasket.

g. Unscrew and remove door post (50) and door stop stud (52).



## CHAPTER VIII

### PARTS LIST

Individual components in these lists are keyed to figures in this manual. Thus 15-3 in the parts list refers to Rem 3 in figure 15.

When ordering parts, specify catalogue number, model and serial number which is located on the sterilizer name plate. Also specify

maintenance manual series number 5030 and 5080.

The Units per Assy. column shows the number of pieces used in a given place in the general assembly. It does not show the total number of parts for the entire unit. Part numbers are for the Americal Sterilizer Co., except where specially noted otherwise.

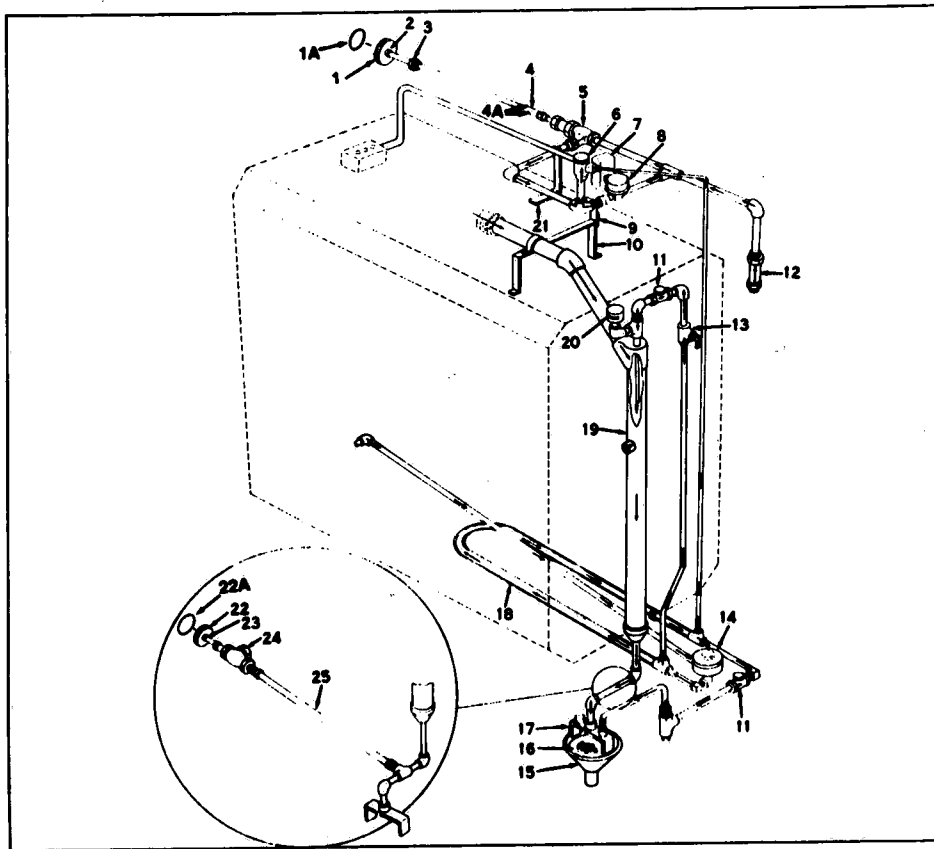


Figure 15. Piping Diagram, Condenser Exhaust for Single Door Sterilizers

Fig. & Index No.	Part Number	Description	Units per Assy.
15-		Piping Diagram, Single Door, ME and UME, Condenser Exhaust	
-1	P-44330-091	Handwheel, Valve	1
-1A	P-44335-091	Decal (CONDENSER EXHAUST)	1
-2	P-8605-042	Nut, Handwheel	1
-3	P-45690-091	Collar, Finishing (Plug Button)	1
-4	P-45524-045	Coupling, Valve extension	1
-4A	P-46038-061	Cotter Pins	2
-5	P-5654-051	Valve, Union angle, 3/8"	1
-6	P-77022-091	Breaker, Vacuum (See figure 25)	1
-7	P-23345-091	Box, Junction	1
*	P-23346-091	Cover, Junction box (Item 7)	1
-8	P-41626-091	Valve, Solenoid	1
*	P-752018-091	Coil Assembly (Part of Item 8)	1
-9	N.L.A.	Support, Pipe	1
-10	P-37159-010	Bracket, Pipe support	1
-11	P-5424-091	Valve, Swing check, 3/8" N.P.S.	2
-12		Strainer, 3/8" N.P.T. (No Longer Available)	1
-13	P-10270-051	Valve, Flow regulator, 3/8" (See figure 26)	1
-14	P-19000-091	Trap, Steam (See figure 28)	1
-15	P-7587-042	Funnel	1
-16	P-23973-091	Screen, Funnel	1
-17	P-35405-091	Fixture, Air gap	1
-18	P-53005-091	Exchanger Assembly, Heat	1
-19	P-34813-091	Tube, Exhaust, 24 x 36 x 36 - 48 - 60	1
	P-37146-091	Tube, Exhaust, 24 x 24 x 36	1
-20	P-29818-042	Valve, Vacuum release	1
-21	N.L.A.	Support, Pipe	1
-22	P-44330-091	Handwheel, Valve (Lab and Formula Only)	1
-22 A	P-44331-091	Decal (By-Pass)	1
-23	P-8605-042	Nut, Handwheel (Lab and Formula Only)	1
-24	P-34029-091	Valve, Union angle, 3/4" (Lab and Formula Only)	1
-25	P-42328-091	Tube, By-Pass, 24 x 24 x 36 and 24 x 36 x 36 (Lab and Formula Only)	1
	P-42329-091	Tube, By-Pass, 24 x 36 x 48 (Lab and Formula Only)	1
*Indicates parts not illustrated.			

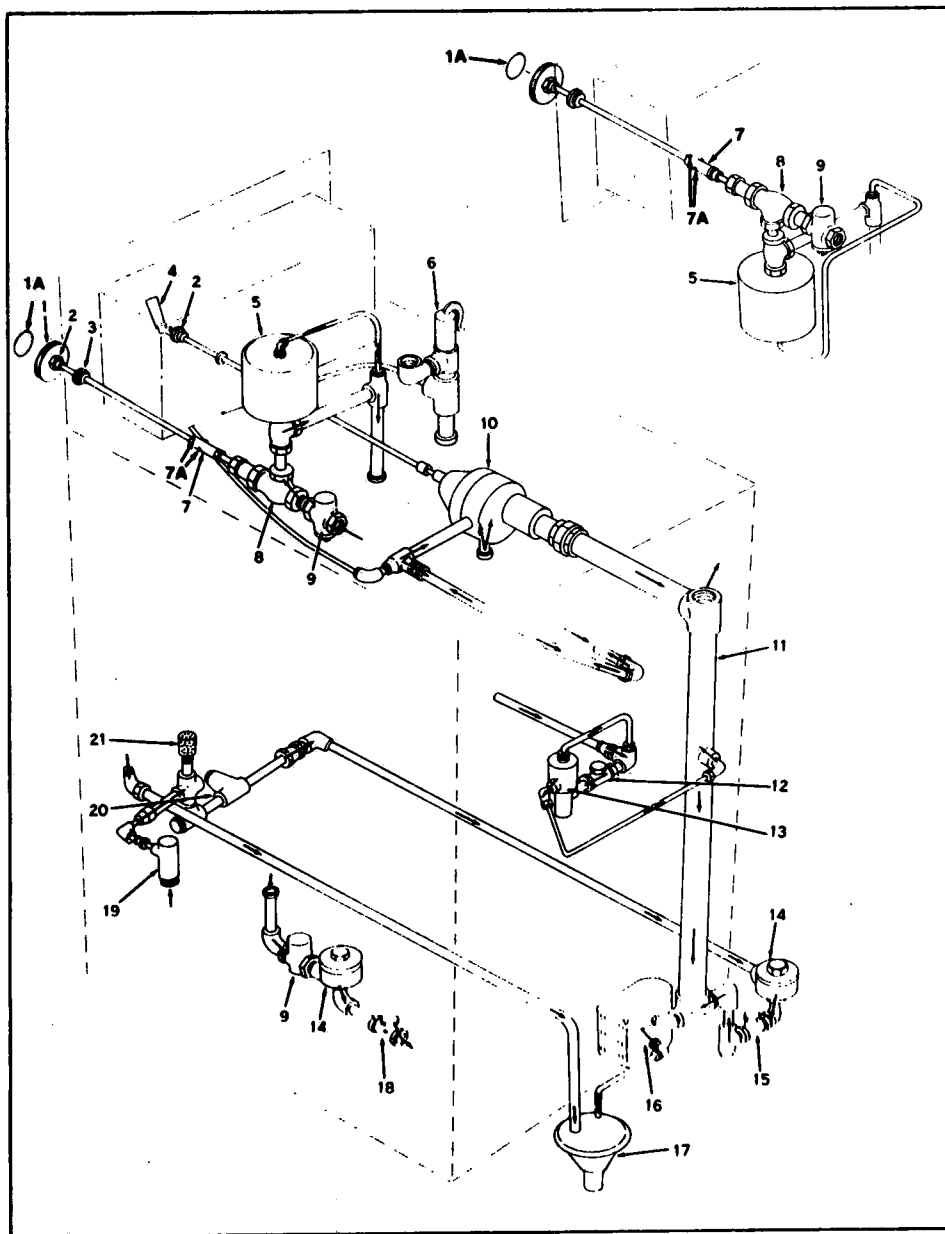


Figure 16. Piping Diagram, Single Door, Atmospheric Exhaust

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Fig. & Index No.	Part Number	Description	Units per Assy.
16-		Exhaust, Single door atmosphere . . . . .	Ref.
-1	P-44330-091	Handwheel, Valve . . . . .	1
-1A	P-44345-091	Decal (STEAM SUPPLY) . . . . .	1
-2	P-8605-042	Nut, Handwheel . . . . .	2
-3	P-45690-091	Collar, Finishing (Plug Button) . . . . .	1
-4	P-29982-091	Handle, Operating . . . . .	1
-5	P-26047-051	Valve, Steam Control Surgical Supply (See figure 19) . . . . .	1
	P-22429-051	Valve, Steam Control, "Hi-Lo" (Lab and Formula) . . . . .	1
-6	P-43003-091	Valve, Safety . . . . .	1
-7	P-45524-045	Coupling . . . . .	1
-7A	P-46038-061	Cotter Pins . . . . .	2
-8	P-26907-051	Valve, 3/4" Union Angle (See figure 20) . . . . .	1
-9	P-4500-051	Strainer, 3/4" N.P.T. . . . .	1
-10	P-21471-091	Valve, Operating (See figure 21) . . . . .	1
-11	P-33092-091	Exhaust Tube Assy., 24 x 24 Surgical Sterilizer . . . . .	1
	P-33093-091	Exhaust Tube Assy., 24 x 36 Surgical Sterilizer . . . . .	1
	P-38305-091	Exhaust Tube Assy., 24 x 24 (Lab or Formula) . . . . .	1
	P-38306-091	Exhaust Tube Assy., 24 x 36 (Lab or Formula) . . . . .	1
-12	P-5424-091	Valve, Check, 3/8" F.P.T. . . . .	1
-13	P-30542-091	Valve, (See figure 22) Solution Exhaust Accelerator Valve . . . . .	1
-14	P-19000-091	Trap, Steam (See figure 28) . . . . .	2
-15	P-41998-091	Valve, Check, 1 2" F.P.T. . . . .	1
-16	P-41536-091	Trap, Float (See figure 27) . . . . .	1
-17	P-8006-042	Funnel . . . . .	1
-18	P-42704-051	Valve, Check, 3/4" N.P.T. . . . .	1
-19	P-10301-043	Dryer, Vacuum (See figure 23) . . . . .	1
-20	P-20256-051	Tee, Thermometer . . . . .	1
-21	P-10666-042	Strainer Assembly . . . . .	1

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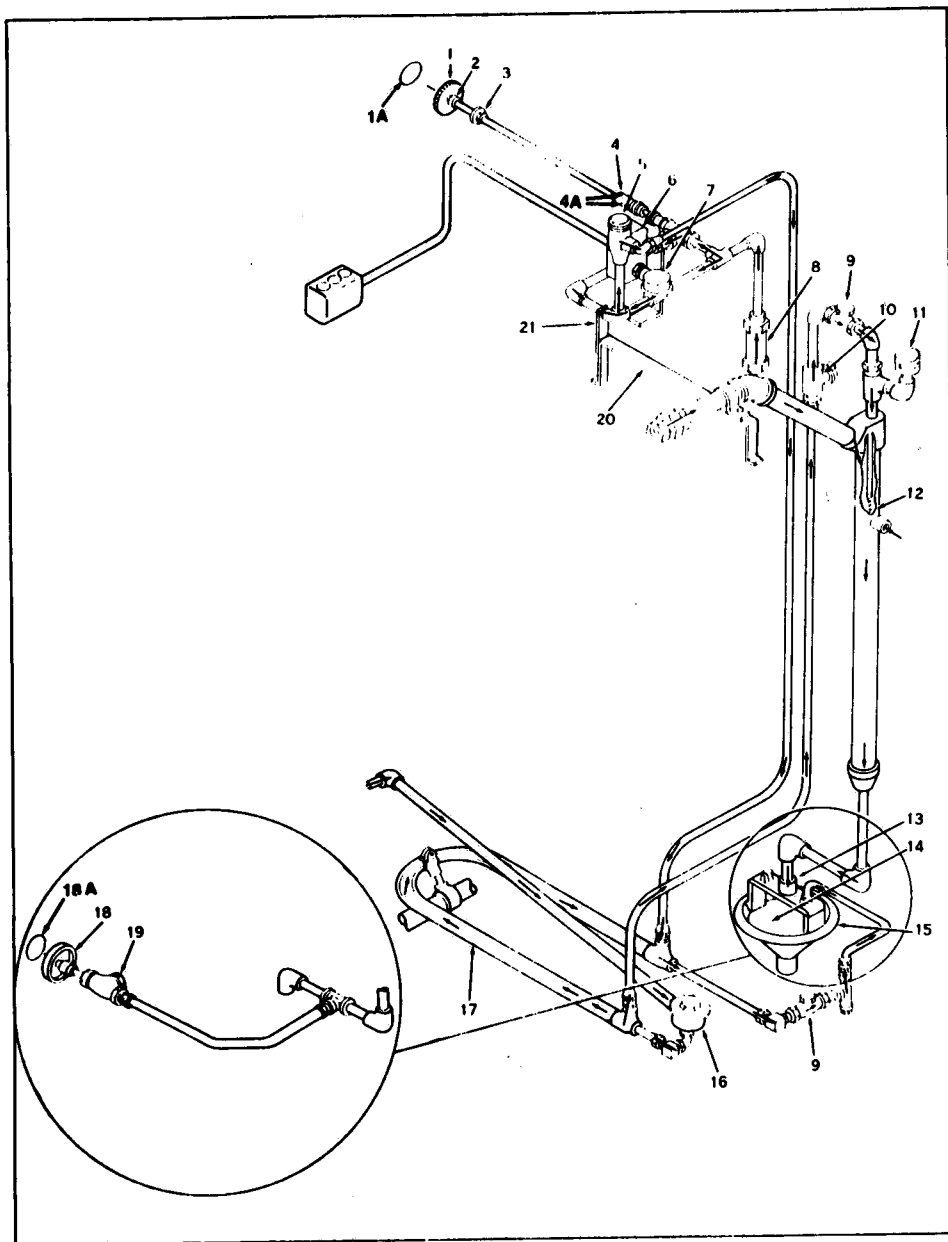


Figure 17. Piping Diagram, Condenser Exhaust for Double Door Sterilizers

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Fig. & Index No.	Part Number	Description	Units per Assy.
17-		Exhaust, Double door - Condenser exhaust . . . . .	Ref.
-1	P-44330-091	Handwheel, Valve . . . . .	1
-1A	P-44335-091	Decal (CONDENSER EXHAUST) . . . . .	1
-2	P-8605-042	Nut, Handwheel . . . . .	1
-3	P-45690-091	Collar, Finishing (Plug Button) . . . . .	1
-4	P-45524-045	Coupling . . . . .	1
-4A	P-46038-061	Cotter Pins . . . . .	2
-5	P-77022-091	Breaker, Vacuum (See figure 25) . . . . .	1
-6	P-23345-091	Box, Junction . . . . .	1
	P-23346-091	• Cover, Junction Box (Not Shown) . . . . .	1
-7	P-41626-091	Valve, Solenoid . . . . .	1
*	P-752018-091	Coil Assembly (Part of item 7) . . . . .	1
-8	N.L.A.	Strainer, Water . . . . .	1
-9	P-5424-091	Valve, Check . . . . .	2
-10	P-10270-051	Valve, Flow regulator (See figure 26) . . . . .	1
-11	P-29818-042	Valve, Vacuum relief (See figure 24) . . . . .	1
-12	P-34813-091	Exhaust Tube Assy., 24 x 36 x 36 - 48 - 60 . . . . .	1
	P-37146-091	Exhaust Tube Assy., 24 x 24 x 36 . . . . .	1
-13	P-35405-091	Fixture, Air gap . . . . .	1
-14	P-23973-091	Screen, Funnel . . . . .	1
-15	P-7587-042	Funnel . . . . .	1
-16	P-19000-091	Trap, Steam (See figure 28) . . . . .	1
-17	P-42308-091	Heat Exchanger Assy. . . . .	1
-18	N.L.A.	Handwheel, By-Pass valve . . . . .	1
-18A	P-44331-091	Decal (By-Pass) . . . . .	1
-19	P-34029-091	Valve, 3/4" Union Angle (See figure 20) . . . . .	1
-20	P-37159-010	Bracket, Pipe support . . . . .	1
-21	N.L.A.	Support, Pipe . . . . .	1
*Indicates parts not illustrated.			

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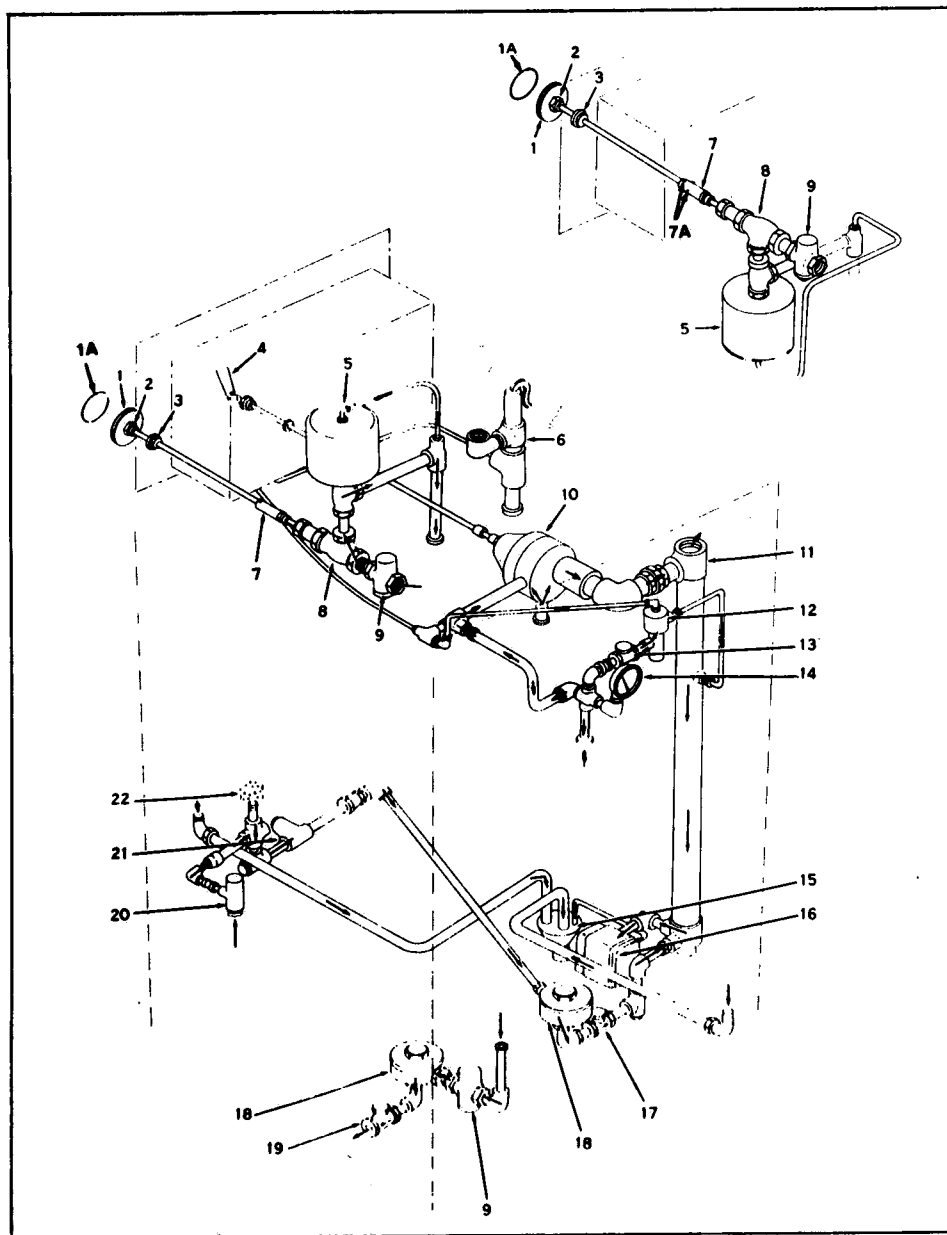


Figure 18. Piping Diagram. Double Door, Atmospheric Exhaust

Fig. & Index No.	Part Number	Description	Units per Assy.
18-		Piping Diagram, Double Door, ME and UME, . . . . . Atmospheric Exhaust	
-1	P-44330-091	Handwheel, Valve . . . . .	1
-1A	P-44345-091	Decal (STEAM SUPPLY) . . . . .	1
-2	P-8605-042	Nut, Handwheel . . . . .	1
-3	P-45690-091	Collar (Plug Button) . . . . .	1
-4	P-29882-091	Handle, Operating . . . . .	1
-5	P-26047-051	Valve, Steam Control (See figure 19) Surgical . . . . .	1
	P-22429-051	Valve, Steam Control, "Hi-Lo" (Lab and Formula) . . . . .	1
-6	P-43063-091	Valve, Safety . . . . .	1
-7	P-45524-045	Coupling, Valve stem . . . . .	1
-7A	P-46088-061	Cotter Pins . . . . .	2
-8	P-26907-051	Valve, 3/4" Union Angle (See figure 20) . . . . .	1
-9	P-4500-051	Strainer, Steam . . . . .	2
-10	P-21471-091	Valve, Operating (See figure 21) . . . . .	1
-11	P-33094-091	Exhaust Tube Assy., 24 x 24 x 36 Surgical Supply . . . . .	1
	P-38311-091	Exhaust Tube Assy., 24 x 24 x 36 (Lab and Formula) . . . . .	1
	P-33095-091	Exhaust Tube Assy., 24 x 36 x 36 - 48 - 60 Surgical Supply . . . . .	1
	P-38309-091	Exhaust Tube Assy., 24 x 36 x 36 - 48 - 60 (Lab and Formula) . . . . .	1
-12	P-30542-091	Valve, (See figure 22) Solution Exhaust Accelerator . . . . .	1
-13	P-5424-091	Valve, Check, 3/8" F.P.T. . . . .	1
-14	P-1940-051	Gauge, Chamber (Compound) . . . . .	1
-15	P-8196-042	Funnel . . . . .	1
-16	P-41586-091	Trap, Float (See figure 27) . . . . .	1
-17	P-41998-091	Valve, Check, 1/2" F.P.T. . . . .	1
-18	P-19000-091	Trap, Steam (See figure 28) 3/4" . . . . .	2
-19	P-42704-051	Valve, Check, 3/4" F.P.T. . . . .	1
-20	P-10801-043	Dryer, Vacuum (See figure 23) . . . . .	1
-21	P-20256-051	Tee, Thermometer . . . . .	1
-22	P-10666-042	Strainer Assembly . . . . .	1

\*Indicates parts not illustrated.

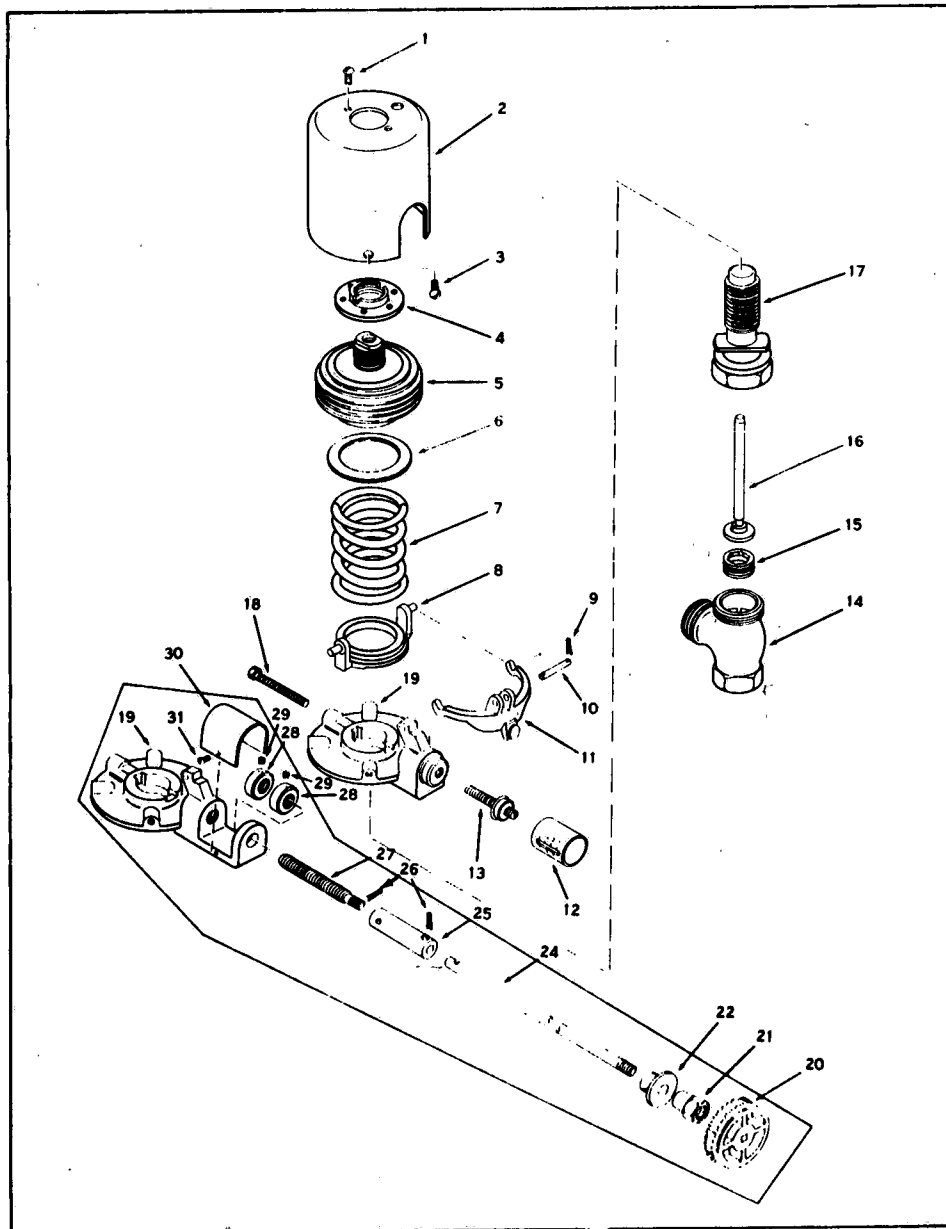


Figure 19. Steam Control Valves - Pre-Set and HI-LO

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Fig. & Index No.	Part Number		Description	Units per Assy.
	Pre-Set Control	Full-Range HI-LO		
19-	P-26047-051		Valve, Steam Control, preset (Surgical Sterilizer)	Ref.
		P-22429-051	Valve, Steam Control, HI-LO (Lab and Formula Sterilizer)	Ref.
-1	P-9276-041	P-9276-041	Screws	2
-2	P-22349-051	P-22349-051	Cover	1
-3	P-3969-041	P-3969-041	Screws, Rd. Hd., 1/4-20 x 1/4" lg.	4
-4	P-9172-091	P-9172-091	Reinforcement	1
-5	P-35880-091	P-35880-091	Bellows	1
-6	P-35911-061	P-35911-061	Plate, Top spring	1
-7	P-19947-045	P-19947-045	Spring	1
-8	P-12474-042	P-12474-042	Plate, Bottom spring	1
-9	P-8897-091	P-8897-091	Pin, Cotter	2
-10	P-11890-061	P-11890-061	Pin, Pivot	1
-11	P-10719-091	P-10719-091	Fork Assembly	1
-12	P-31273-044		Sleeve, Indicator	1
-13	P-11416-091		Screw, Pressure adjust	1
-14	P-22427-051	P-22427-051	Body, Angle valve, 3/4"	1
-15	P-22425-061	P-22425-061	Seat, Valve, 3/4"	1
-16	P-28267-091	P-28267-091	Stem Assembly	1
-17	P-26837-051	P-26837-051	Bonnet and Sylphon Assembly	1
-18	P-12471-041	P-12471-041	Screw	1
-19	P-11887-042	P-20658-042	Plate, Bottom	1
-20		P-44369-091	Handwheel	1
-21		P-8605-042	Nut, Wheel	1
-22		P-45690-091	Collar, Finishing (snap in plug button)	1
-23			(Not Used)	
-24		P-45497-043	Rod, Valve extension (15-3/4" L.G.)	1
-25		P-45524-045	Coupling, Extension rod	1
-26		P-46038-061	Pin, Cotter	2
-27		P-20657-061	Screw, Adjusting	1
-28		P-20659-091	Nut, Lock	2
-29		P-10585-041	Setscrew	2
-30		P-20662-061	Cover, Adjusting screw	1
-31		P-12534-061	Screw, #8-32 x 1/4"	2

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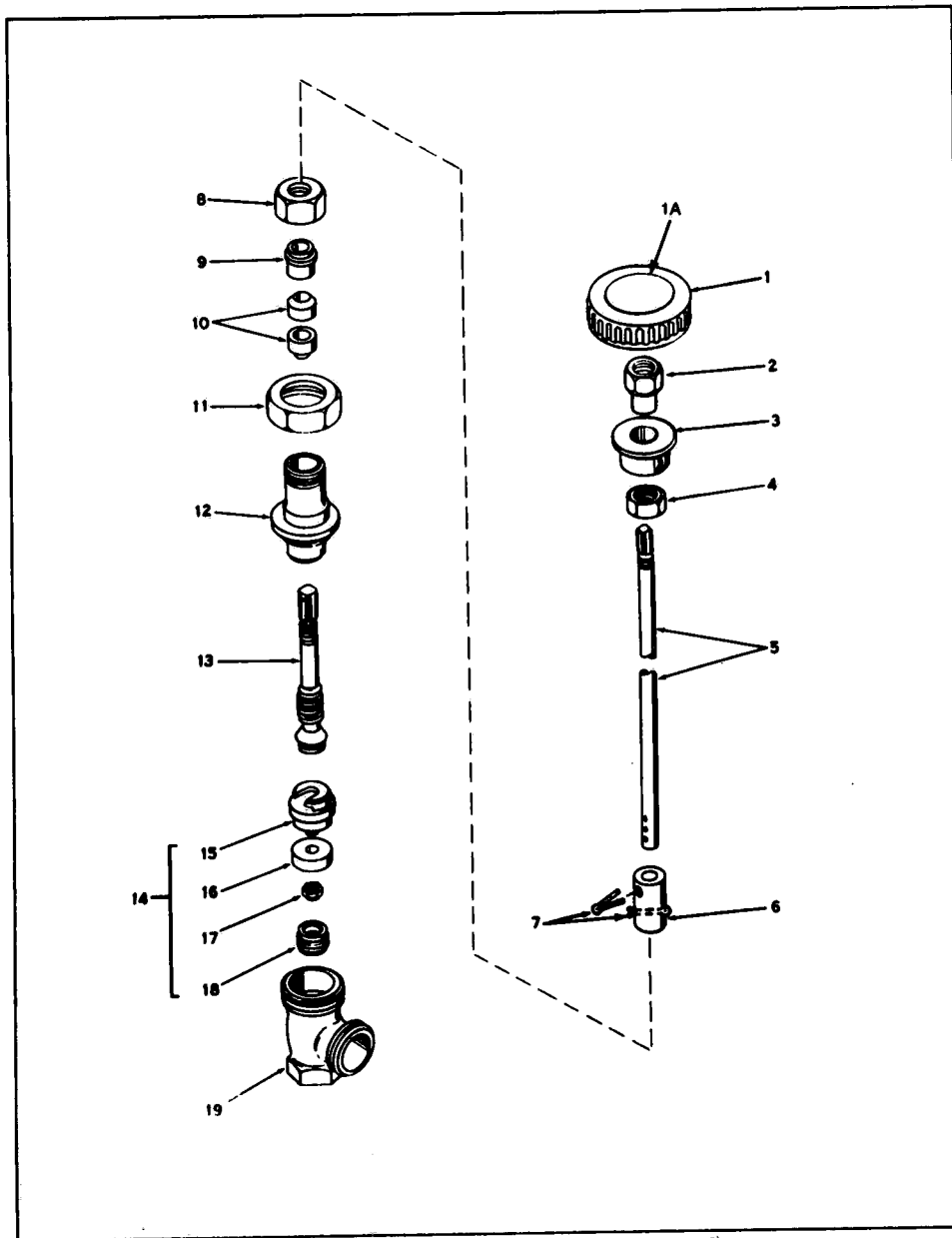


Figure 20. Steam Valve (With Extension)

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Fig. & Index No.	Part Number	Description	Units per Assy.
20-	P-26907-051	Valve, Steam, 3/4" . . . . .	Ref.
-1	P-44330-091	Handwheel . . . . .	1
-1A	P-44345-091	Decal (STEAM SUPPLY) . . . . .	1
-2	P-8605-042	Nut, Handwheel . . . . .	2
-3	P-45690-091	Collar, Finishing (snap in plug button) . . . . .	1
-4		(NOT USED)	
-5	P-45497-043	Rod, Extension, 15-3/4" . . . . .	1
-6	P-46524-045	Coupling . . . . .	1
-7	P-46038-061	Pin, Cotter 1/4" x 1/4" lg. . . . .	2
	A-53917-051	Stem Bonnet Assembly . . . . .	1
-8	P-8604-051	• Nut, Packing . . . . .	1
-9	P-5679-042	• Gland, Packing . . . . .	1
-10	P-8784-091	• Packing . . . . .	2
-11	P-25566-051	• Nut, Bonnet . . . . .	1
-12	N.L.A.*	• Bonnet, Valve . . . . .	1
-13	N.L.A.*	• Stem, Valve . . . . .	1
-14	P-25567-091	Disc Holder Assembly (Includes Items 15, 16 and 17) . . . . .	1
-15	P-25568-091	Disc Holder . . . . .	1
-16	P-25569-091	Disc, Teflon . . . . .	1
-17	P-2927-091	Nut, Disc . . . . .	1
-18	P-22425-061	Seat, Valve . . . . .	1
-19	P-22427-051	Body, Valve . . . . .	1
*NOTE: Order A-53917-051, Stem Bonnet Assembly.			

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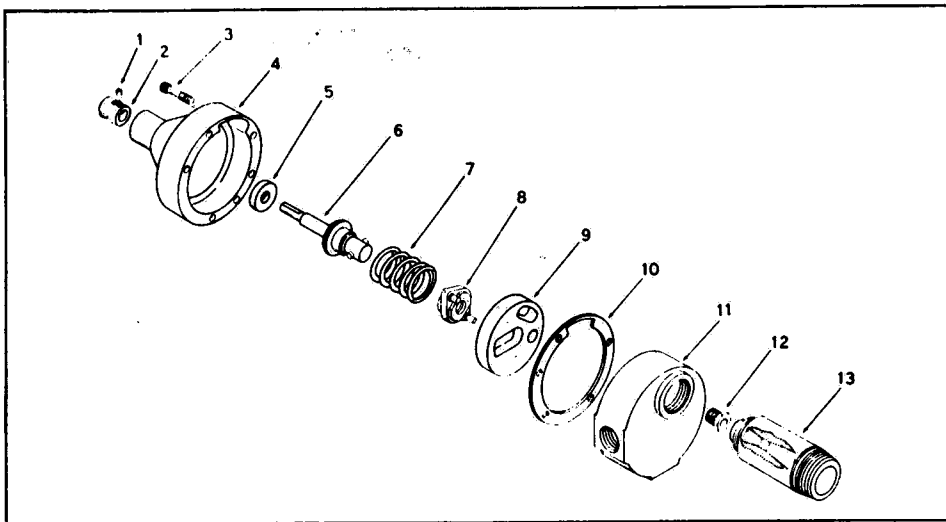


Figure 21. Operating Valve Assembly

Fig. & Index No.	Part Number	Description	Units per Assy.
21-	P-21471-091	Valve, Operating . . . . .	Ref.
-1	P-21036-091	Screw, Allen . . . . .	2
-2	P-21424-048	Coupling . . . . .	1
-3	P-12572-061	Screw, Hex . . . . .	5
-4	P-21418-091	Bonnet . . . . .	1
-5	P-21423-091	Washer . . . . .	1
-6	P-21427-061	Stem . . . . .	1
-7	P-13650-061	Spring . . . . .	1
-8	P-21419-091	Fork . . . . .	1
-9	P-21422-091	Seal . . . . .	1
-10	P-13689-091	Gasket . . . . .	1
-11	P-21417-091	Body . . . . .	1
-12	P-42192-091	Nozzle . . . . .	1
-13	P-42191-091	Ejector . . . . .	1

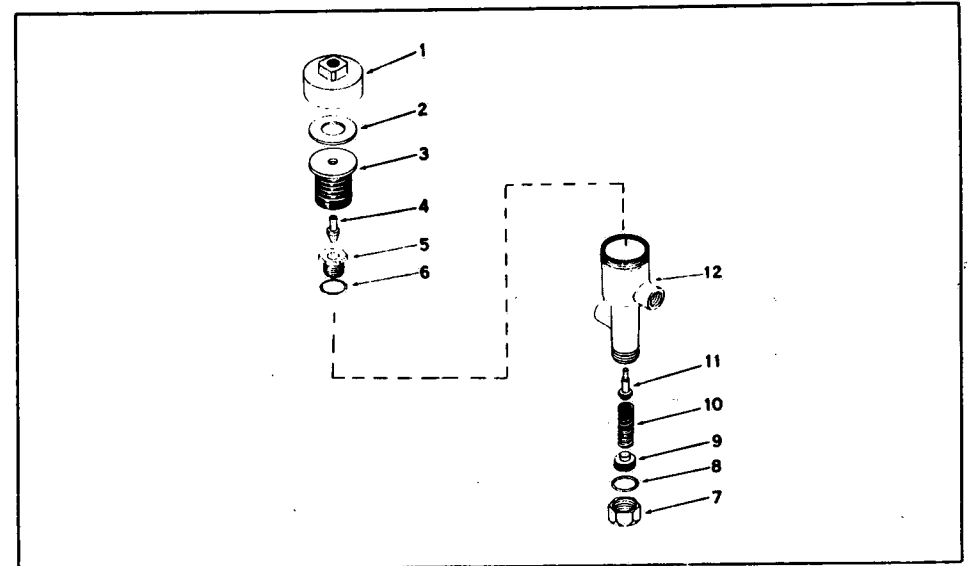


Figure 22. Solution Exhaust Accelerator Valve Assembly

Fig. & Index No.	Part Number	Description	Units per Assy.
22-	P-30542-091	Valve Assembly, Solution Exhaust Accelerator . . . . .	Ref.
-1	P-30543-091	Cover, Valve . . . . .	1
-2	P-30544-091	Gasket . . . . .	1
-3	P-30546-091	Sylphon Assembly . . . . .	1
-4	P-30549-091	Valve, Needle . . . . .	1
-5	P-30550-091	Seat, Valve . . . . .	1
-6	P-7831-091	Gasket . . . . .	1
-7	P-30554-091	Cap, Valve . . . . .	1
-8	P-33170-091	Gasket . . . . .	1
-9	P-30553-091	Plug . . . . .	1
-10	P-30552-061	Spring . . . . .	1
-11	P-30551-061	Pilot . . . . .	1
-12	P-30545-091	Body, Valve . . . . .	1

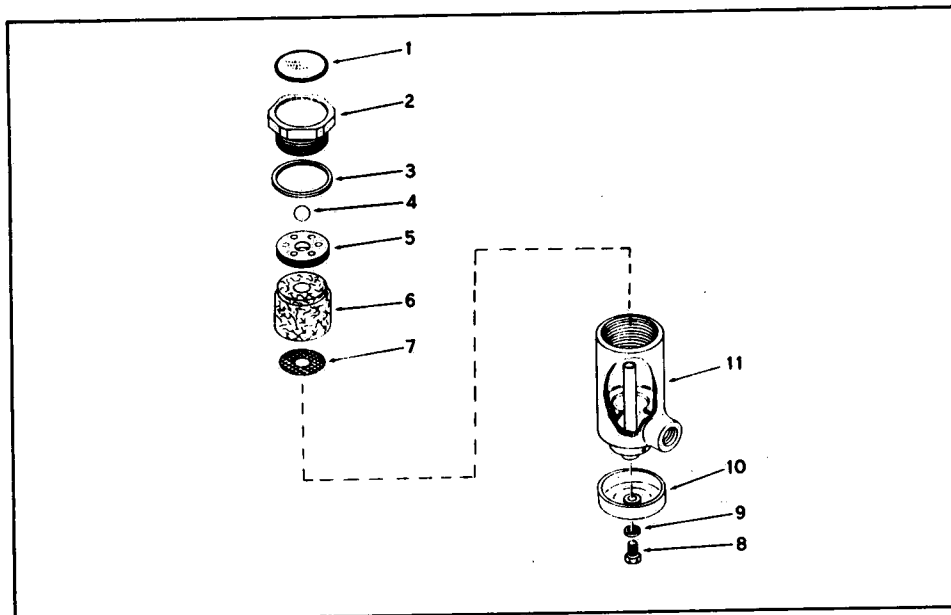


Figure 23. Vacuum Dryer Assembly

Fig. & Index No.	Part Number	Description	Units per Assy.
23-	P-10301-043	Vacuum Dryer Assembly. . . . .	Ref.
-1	P-12008-091	Plate, Name . . . . .	1
-2	P-12009-043	Plug . . . . .	1
-3	P-46754-091	Gasket . . . . .	1
-4	P-12609-091	Ball . . . . .	1
-5	P-8682-091	Nut, Special . . . . .	1
-6	R-1417-001	Wool, Monel, 1/2 oz. . . . .	1
-7	P-11334-047	Screen . . . . .	1
-8	P-12551-061	Screw . . . . .	1
-9	P-19691-061	Lockwasher . . . . .	1
-10	P-11602-043	Cup . . . . .	1
-11	P-5756-043	Housing Assembly . . . . .	1

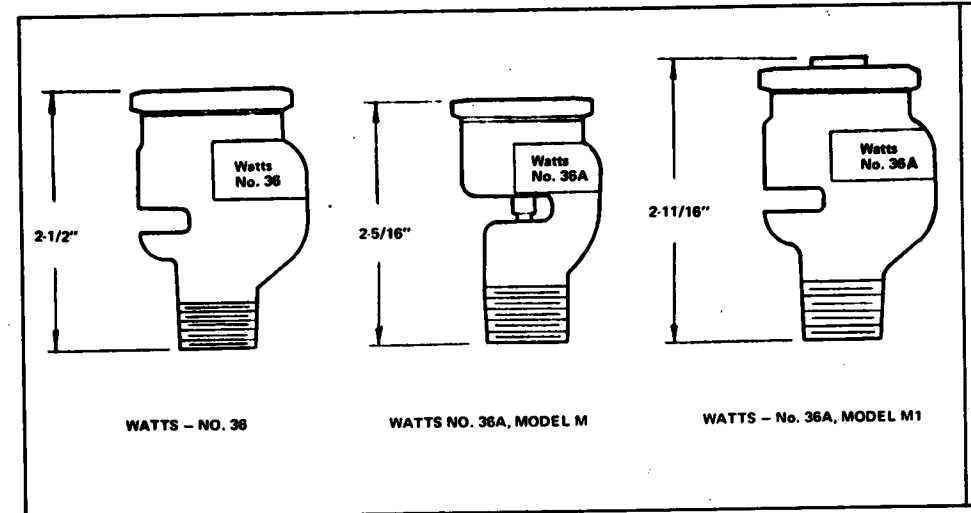


Figure 24. Vacuum Relief Valve.

NOTE: To replace Items 10, 12 and 13 order Repair Kit 751285 and to replace complete valve mechanism assembly order Q-756148-091.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
24-	P-29818-091	VACUUM RELIEF VALVE (½) . . . . .	X			
	P-757588-091	REPAIR KIT (includes disc assembly and bonnet gasket); Watts★ #36 & 36A, M1 . . . . .	A/R			
	P-753646-091	REPAIR KIT (includes disc assembly and bonnet gasket); Watts★ #36, M . . . . .	A/R			
		★Watts Regulator Company, Lawrence, Mass.				

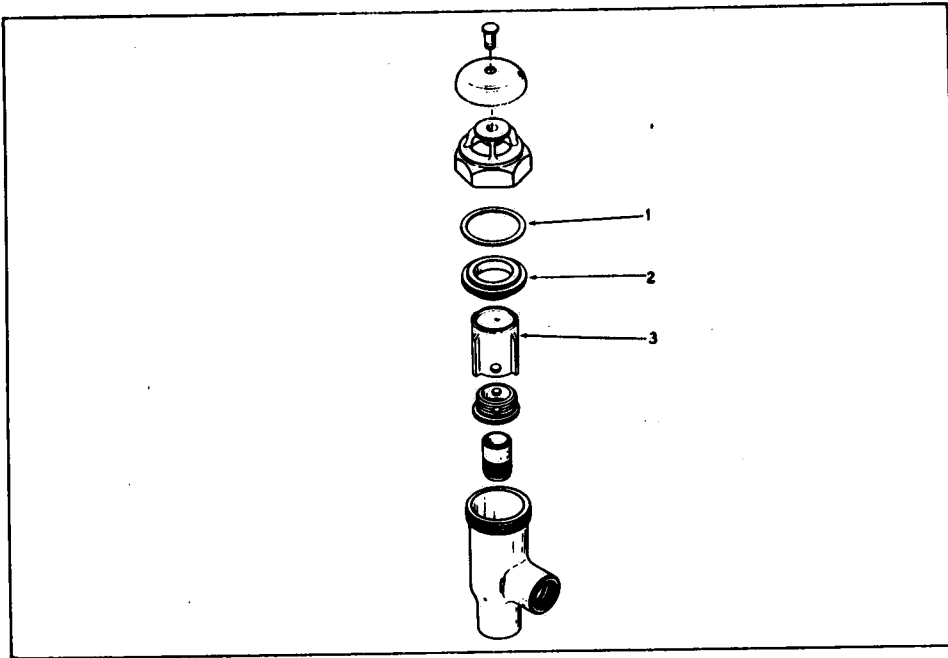


Figure 25. Vacuum Breaker

Fig. & Index No.	Part Number	Description	Units per Assy.
25-	P-77022-051	Breaker, Vacuum, 1/2" N.P.T. (V-370-A) . . . . .	Ref.
	P-751077-091	Internal Repair Kit	
-1		• Ring, Friction . . . . .	1
-2		• Seat, Air Valve . . . . .	1
-3		• Float . . . . .	1

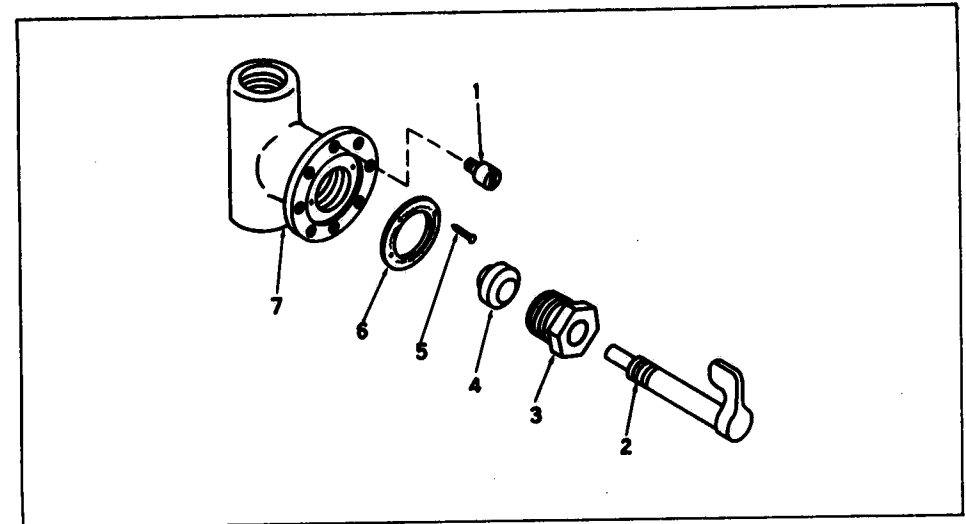


Figure 26. Flow Regulator Valve

Fig. & Index No.	Part Number	Description	Units per Assy.
26-	P-10270-051	Valve, Flow regulator . . . . .	Ref.
-1	P-12287-041	Screw, Stop . . . . .	1
-2	P-12286-043	Stem . . . . .	1
-3	P-2969-051	Nut, Packing . . . . .	1
-4	P-46355-091	Packing . . . . .	1
-5	P-24221-042	Stud, Drive . . . . .	2
-6	P-11786-091	Plate, Name . . . . .	1
-7	P-6420-051	Body . . . . .	1

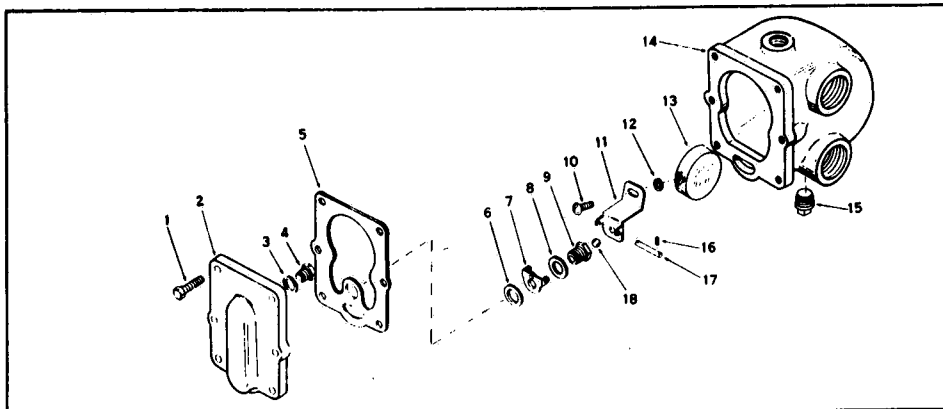


Figure 27. Float Trap

Fig. & Index No.	Part Number	Description	Units per Assy.
27-	P-41536-091	Trap, Float 3/4", 0-15 psi . . . . .	Ref.
-1	*	Screw, Hex hd. cap, 5/16" - 18 x 7/8" . . . . .	6
-2	**B50897	Cover . . . . .	1
-3	*	Gasket, Copper . . . . .	1
-4	*	Plug . . . . .	1
-5	*P-751284-091	Gasket, Cover, graphite asb. . . . .	1
-6	*	Gasket, Seat bracket . . . . .	1
-7	**SKM29229	Bracket, Seat . . . . .	1
-8	*	Gasket, Seat . . . . .	1
-9	**M50878	Seat . . . . .	1
-10	*	Screw, Rd. hd., 1/4" - 20 x 5/16" brass . . . . .	1
-11	**D50883	Head and Float Arm Assembly . . . . .	1
-12	*	Lockwasher, Stainless steel . . . . .	1
-13	*P-751285-091	Float, Stainless steel with screw . . . . .	1
-14	**A50900	Body . . . . .	1
-15	*	Plug, 3/8" pipe . . . . .	1
-16	*	Pin, Retaining . . . . .	2
-17	*	Pin, Pivot . . . . .	1
-18	*	Ball . . . . .	1

\*Identify by name of part and float trap number and size.  
 \*\*Part number of Sarco Co., Inc., 635 Madison Ave., N.Y. 22, N.Y.  
 NOTE: To replace Items 10, 12 and 13 order Repair Kit 751285 and to replace complete valve mechanism assembly order Q-750148-091.

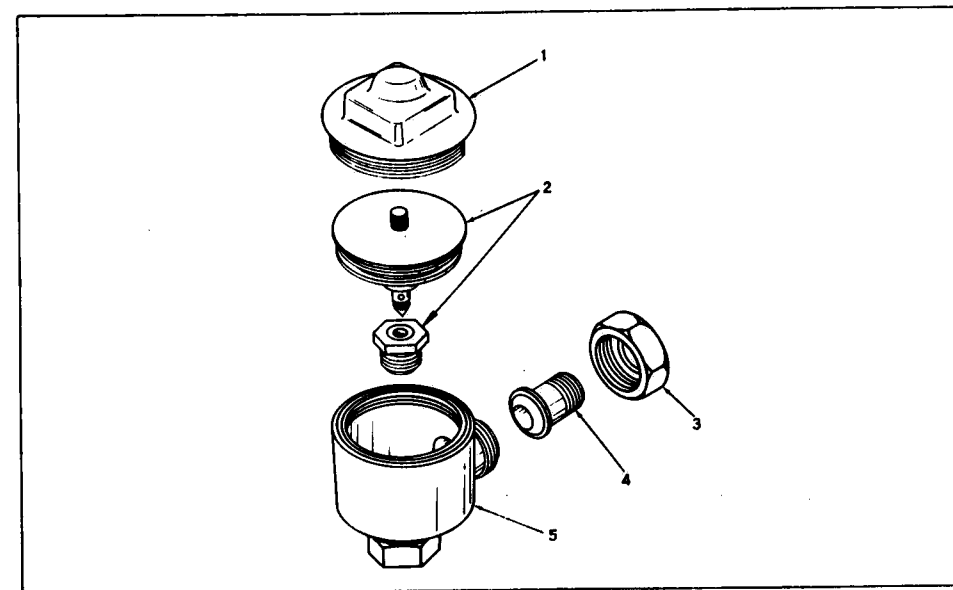


Figure 28. Steam Trap

Fig. & Index No.	Part Number	Description	Units per Assy.
28-	P-19000-051	Trap, Steam, 3/4" N.P.S. . . . .	Ref.
-1	*	Cap . . . . .	1
-2	P-30397-091	Diaphragm Assembly & Seat . . . . .	1
-3	P-2903-051	Nut, Union . . . . .	1
-4	P-4247-042	Spud, Male, 3/4" union . . . . .	1
	P-4248-042	Spud, Female, 3/4" union . . . . .	1
-5	N.L.A.	Body . . . . .	1

\*Identify by name of part and steam trap number.



Fig. & Index No.	Part Number	Description	Units per Assy.
29-	40755	Cabinet Assy., 24 x 24 x 36 Single Door . . . . .	Ref.
	40756	Cabinet Assy., 24 x 36 x 36 Single Door . . . . .	Ref.
	40757	Cabinet Assy., 24 x 36 x 48 Single Door . . . . .	Ref.
	40758	Cabinet Assy., 24 x 36 x 60 Single Door . . . . .	Ref.
	40759	Cabinet Assy., 24 x 24 x 36 Double Door . . . . .	Ref.
	40760	Cabinet Assy., 24 x 36 x 36 Double Door . . . . .	Ref.
	40761	Cabinet Assy., 24 x 36 x 48 Double Door . . . . .	Ref.
	40762	Cabinet Assy., 24 x 36 x 60 Double Door . . . . .	Ref.
-1	33666	Collar, Finishing, Top - Double Door Only . . . . .	2
-2	P-33640-063	Panel, Upper Front - All Cabinets . . . . .	1
-3	33621	Panel, Access, 24 x 24 x 36 and 24 x 36 x 36 Single Door . . . . .	1
	33634	Panel, Access, 24 x 36 x 48 Single Door . . . . .	1
	33637	Panel, Access, 24 x 36 x 60 Single Door . . . . .	1
	33646	Panel, Access, 24 x 24 x 36 and 24 x 36 x 36 Double Door . . . . .	1
	33655	Panel, Access, 24 x 36 x 48 Double Door . . . . .	1
	33660	Panel, Access, 24 x 36 x 60 Double Door . . . . .	1
-4	33613	Angle, Support - All Cabinets . . . . .	2
-5	33646	Panel, Access, 24 x 36 x 48 and 24 x 36 x 60 Double Door . . . . .	1
-6	33665	Panel, Upper Rear - All Double Door Cabinets . . . . .	1
-7	29677	Moulding, Rubber, 24 x 24 x 36 Single Door . . . . .	1
	29677	Moulding, Rubber, 24 x 24 x 36 Double Door . . . . .	2
	29554	Moulding, Rubber, 24 x 36 x 36 - 48 - 60 Single Door . . . . .	1
	29554	Moulding, Rubber, 24 x 36 x 36 - 48 - 60 Double Door . . . . .	2
-8	33641	Panel, Lower - All Single Door Cabinets . . . . .	1
	33641	Panel, Lower - All Double Door Cabinets . . . . .	11
-9	P-27242-061	Staple - Single Door Cabinet . . . . .	1
	P-27242-061	Staple - Double Door Cabinet . . . . .	2
-10	P-12544-061	Screw, Truss Hd., 1/4 - 20 x 1/2 - Single Door Cabinet . . . . .	8
	P-12544-061	Screw, Truss Hd., 1/4 - 20 x 1/2 - Double Door Cabinet . . . . .	16
-11	P-20866-061	Flap - Single Door Cabinet . . . . .	4
	P-20866-061	Flap - Double Door Cabinet . . . . .	8
-12	33609	Frame Assy., Side, 24 x 24 x 36 Cabinets . . . . .	2
	33614	Frame Assy., Side, 24 x 36 x 36 Cabinets . . . . .	2
	33617	Frame Assy., Side, 24 x 36 x 48 Cabinets . . . . .	2
	33610	Frame Assy., Side, 24 x 36 x 60 Cabinets . . . . .	2
-13	33626	Panel, R.H. Side, 24 x 24 x 36 Single Door . . . . .	1
	33627	Panel, L.H. Side, 24 x 24 x 36 Single Door . . . . .	1
	33632	Panel, R.H. Side, 24 x 36 x 36 Single Door . . . . .	1
	33633	Panel, L.H. Side, 24 x 36 x 36 Single Door . . . . .	1
	33636	Panel, R.H. Side, 24 x 36 x 48 Single Door . . . . .	1
	33635	Panel, L.H. Side, 24 x 36 x 48 Single Door . . . . .	1
	33638	Panel, R.H. Side, 24 x 36 x 60 Single Door . . . . .	1
	33638	Panel, L.H. Side, 24 x 36 x 60 Single Door . . . . .	1
	33639	Panel, R.H. Side, 24 x 24 x 36 Double Door . . . . .	1
	33647	Panel, L.H. Side, 24 x 24 x 36 Double Door . . . . .	1
	33649	Panel, R.H. Side, 24 x 36 x 36 Double Door . . . . .	1
	33651	Panel, L.H. Side, 24 x 36 x 36 Double Door . . . . .	1
	33653	Panel, R.H. Side, 24 x 36 x 36 Double Door . . . . .	1
	33653	Panel, L.H. Side, 24 x 36 x 36 Double Door . . . . .	1

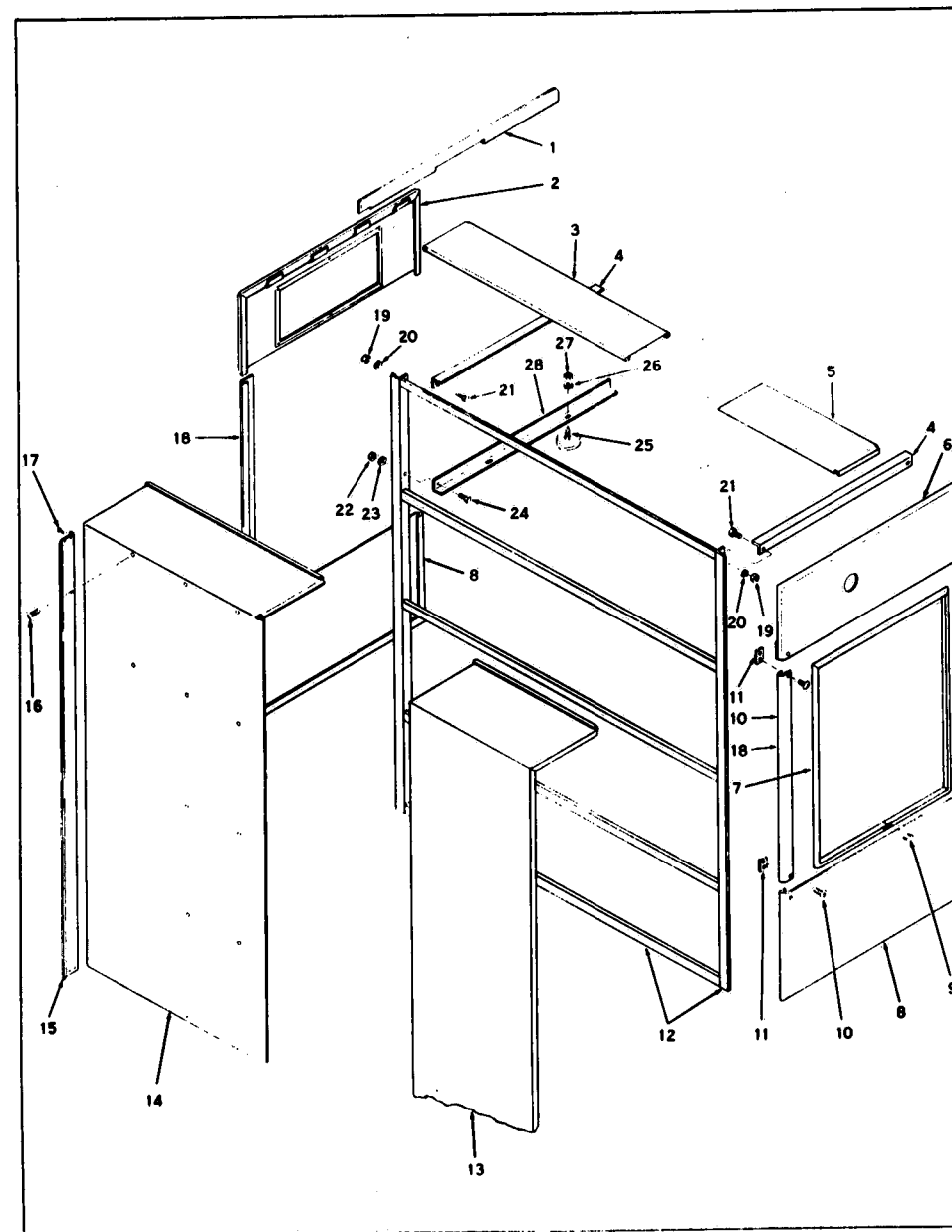


Figure 29. Cabinet Assembly

Fig. & Index No.	Part Number	Description	Units per Assy.
29-13	33656	Panel, R.H. Side, 24x36x48 Double Door . . . . .	1
	33658	Panel, L.H. Side, 24x36x48 Double Door . . . . .	1
	33661	Panel, R.H. Side, 24x36x60 Double Door . . . . .	1
	33663	Panel, L.H. Side, 24x36x60 Double Door . . . . .	1
-14	33622	Panel, R.H. Side, 24x24x36 - Single Door and Double Door . . . . .	1
	33624	Panel, L.H. Side, 24x24x36 - Single Door and Double Door . . . . .	1
	33628	Panel, R.H. Side, 24x36x36 - 48 - 60 Single Door and Double Door . . . . .	1
	33630	Panel, L.H. Side, 24x36x36 - 48 - 60 Single Door and Double Door . . . . .	1
-15	33669	Collar, Finish., Side, 24x24x36 Double Door . . . . .	4
	33668	Collar, Finish., Side, 24x36x36 - 48 - 60 Double Door . . . . .	4
-16	P-10859-041	Screw, Truss Hd. #10-32x5/16" . . . . .	50
-17	P-23437-041	Screw, Self Tap, #8-32-1/4" - Double Door Fin. Collars . . . . .	18
-18	32233	Panel, Side, 24x24x36 Double Door . . . . .	4
	P-32236-061	Panel, Side, 24x36x36 - 48 - 60 Double Door . . . . .	4
-19	P-3097-041	Nut, Hex, 1/4-20 . . . . .	4
-20	P-19678-045	Lockwasher, 1/4" . . . . .	6
-21	P-3848-051	Screw, Hex Hd., 1/4-20 x 3/4" . . . . .	6
-22	P-3101-041	Nut, Hex, 1/2-13 . . . . .	8
-23	P-19681-045	Lockwasher, 1/2" . . . . .	8
-24	P-3872-051	Screw, Hex Hd., 1/2-13x1-1/4" Lg. . . . .	8
-25	P-33605-091	Stud, Welding, 3/8-16x1-1/4" Lg. . . . .	8
-26	P-19680-041	Lockwasher, 3/8" . . . . .	8
-27	P-3099-051	Nut, Hex, 3/8-16 . . . . .	8
-28	M-33608-010	Angle, Support . . . . .	4
*	41938	Bar, Support (Top Center) All Cabinets . . . . .	1
*	P-40765-091	Insulation, Shell, 24x24x36 Single Door . . . . .	1
*	P-40766-091	Insulation, Backhead, 24x24x36 Single Door . . . . .	2
*	P-40767-091	Insulation, Shell, 24x36x36 Single Door; 24x36x48 Single Door; 24x36x48 Double Door . . . . .	1
*	P-40767-091	Insulation, Shell, 24x36x60 Single Door . . . . .	2
*	P-40768-091	Insulation, Backhead, 24x36x36 Single Door . . . . .	2
*	P-40769-091	Insulation, Backhead, 24x36x48 and 60 Single Door . . . . .	1
*	P-40770-091	Insulation, Shell, 24x36x48 Single Door and Double Door . . . . .	1
*	P-40770-091	Insulation, Shell, 24x36x36 Double Door . . . . .	2
*	P-40771-091	Insulation, Shell, 24x24x36 Double Door . . . . .	2
*	P-36243-091	Strap, Insulation (Alum.) 24x24 Shells . . . . .	4
*	P-36244-091	Strap, Insulation (Alum.) 24x36 Shells . . . . .	4
*	P-32268-091	Seal, Insulation Strap (Alum.) . . . . .	4

\*Parts not illustrated.

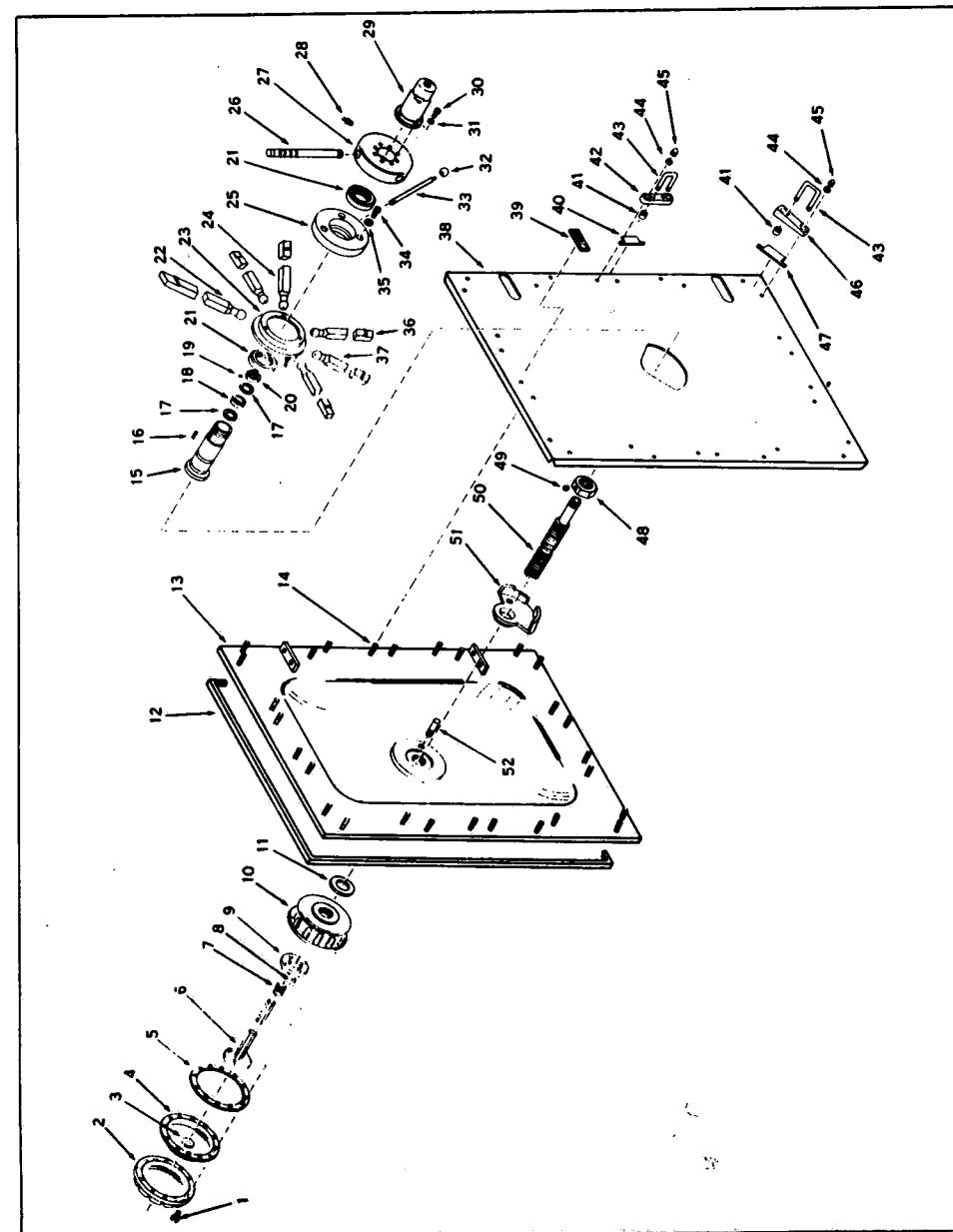


Figure 30. Door Assembly

Fig. & Index No.	Part Number		Description	Units per Assy.
	ME	UME		
30-	N.L.A.	N.L.A.	Door Assembly, 24 x 36 . . . . .	Ref.
	N.L.A.	N.L.A.	Door Assembly, 24 x 24 . . . . .	Ref.
-1	P-4782-061	P-4782-061	Screws, Cover, 1/4 - 28 x 5/8" hex . . . . .	12
-2	P-6624-042	P-6624-042	Cover, Diaphragm . . . . .	1
-3	P-8778-091	P-8778-091	Plate, Diaphragm thrust . . . . .	1
-4	P-7230-061	P-7230-061	Diaphragm . . . . .	1
-5	P-7753-091	P-7753-091	Gasket, Diaphragm . . . . .	1
-6	P-17974-042	P-17974-042	Clutch and Lock Rod Assembly . . . . .	1
-7	P-11709-091	P-11709-091	Spring, Lock clutch . . . . .	1
-8	11829	11829	Pin, Clutch . . . . .	4
-9	P-11707-091	P-11707-091	Lock, Clutch . . . . .	1
-10	P-11706-042	P-11706-042	Support, Diaphragm . . . . .	1
-11	P-27222-091	P-27222-091	Gasket, Door post . . . . .	1
-12	P-754877-091	P-754877-091	Gasket, Door, 24 x 36 . . . . .	1
	P-754878-091	P-754878-091	Gasket, Door, 24 x 24 . . . . .	1
-13			**Door Assembly, 24 x 36 . . . . .	1
			Door Assembly, 24 x 24 (N.L.A.) . . . . .	1
-14	P-35459-091	P-35459-091	Stud, Weld, 24 x 36 Door . . . . .	28
	P-35459-091	P-35459-091	Stud, Weld, 24 x 24 Door . . . . .	24
-15	P-37368-091	P-37368-091	Screw-box . . . . .	1
-16	P-23533-091	P-23533-091	Key, Handwheel . . . . .	1
-17	P-10468-091	P-10468-091	Washer . . . . .	2
-18	P-20246-091	P-44078-091	Washer, Thrust, nylon . . . . .	1
-19	P-10759-091	P-10759-091	Setacrews, Headless, 1/4-20 x 3/16" . . . . .	2
-20	P-6446-091	P-6446-091	Bushing, Door post lock . . . . .	1
-21	P-519-091	P-519-091	Bearing, Thrust . . . . .	2
-22	P-42044-061	P-42044-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 15-7/8) . . . . .	2
	P-42066-061	P-42066-010	Arm, Radial, 24 x 24 (1 x 1-1/4 x 13-1/4) . . . . .	4
	P-42045-061	P-42045-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 15-7/8) . . . . .	2
	P-42065-061	P-42065-010	Arm, Radial, 24 x 24 (1 x 1-1/4 x 13-1/4) . . . . .	4
-23	37374	37374	Plate, Bottom socket, 24 x 24 and 24 x 36 . . . . .	1
-24	P-42047-061	P-42047-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 23) . . . . .	2
	P-42067-061	P-42067-010	Arm, Radial, 24 x 24 (1 x 1-1/4 x 18-5/8) . . . . .	2
	P-42046-061	P-42046-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 23) . . . . .	2
-25	P-37372-061	P-37372-010	Plate, Top socket, 24 x 36 . . . . .	1
	P-37373-061	P-37373-010	Plate, Top socket, 24 x 24 . . . . .	1

Fig. & Index No.	Part Number		Description	Units per Assy.
	ME	UME		
30-26	P-28382-051	P-28382-051	Handle Assembly . . . . .	4
-27	P-24138-051	P-24138-051	Hub, Handwheel . . . . .	1
-28	P-27387-051	P-27387-051	Fitting, Lubrication . . . . .	1
-29	P-11596-051	P-11596-051	Cap, Screw-box . . . . .	1
-30	P-3819-051	P-3819-051	Screw, Fil. hd., 1/4-20 x 1/2" . . . . .	4
-31	P-10436-041	P-10436-041	Lockwasher, 1/4" . . . . .	4
-32	P-16418-091	P-16418-091	Knob . . . . .	1
-33	P-28391-051	P-28391-051	Handle, Socket plate . . . . .	1
-34	P-9245-091	P-18786-045	Screw, Soc. hd., 3/8-16 x 1-1/2" . . . . .	3
-35	P-10470-061	P-10470-061	Lockwasher, 3/8" . . . . .	3
-36	P-42048-051	P-42048-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 19-1/8) . . . . .	4
	P-45982-051	P-45982-010	Arm, Radial, 24 x 24 (1 x 1-1/4 x 18-5/8) . . . . .	2
-37	P-42043-051	P-42043-010	Arm, Radial, 24 x 36 (1 x 1-1/4 x 12-5/8) . . . . .	2
-38			Plate, Door cover, 24 x 36 . . . . .	1
			Plate, Door cover, 24 x 24 . . . . .	1
-39	P-31824-091	P-31824-091	Plate, Name . . . . .	1
-40	P-33379-061	P-33379-061	Shim, Arm clip, 0.025" Thick . . . . .	AR
-41	P-39748-091	P-39748-091	Spacer, 24 x 36 . . . . .	28
			Spacer, 24 x 24 . . . . .	24
-42	P-38387-051	P-38387-051	Fulcrum, 24 x 36 . . . . .	6
			Fulcrum, 24 x 24 . . . . .	4
-43	P-42051-062	P-42051-062	Clip, Arm, 24 x 36 . . . . .	14
			Clip, Arm, 24 x 24 . . . . .	12
-44	P-19686-061	P-19686-061	Lockwasher, 1/4", 24 x 36 . . . . .	28
			Lockwasher, 1/4", 24 x 24 . . . . .	24
-45	P-33378-051	P-33378-051	Nut, Acorn, 1/4-20, 24 x 36 . . . . .	28
			Nut, Acorn, 1/4-20, 24 x 24 . . . . .	24
-46	P-38389-051	P-38389-051	Fulcrum, 24 x 36 and 24 x 24 . . . . .	8
-47	P-33380-061	P-33380-061	Shim, Arm clip, 0.015" Thick . . . . .	AR
-48	P-33384-021	P-33384-021	Nut, Hex, 1-1/2" - 6 . . . . .	1
-49	P-33307-091	P-33307-091	Setscrew, 3/8" - 16 x 3/4" . . . . .	1
-50	P-33562-091	P-33562-091	Post, Door . . . . .	1
-51	P-38380-010	38380-010	Stop, Door . . . . .	1
-52	P-11104-091	P-11104-091	Stud, Door stop . . . . .	1
			**Replaced by Medallion Doors R.H. 760151-001 and L.H. 760151-002	

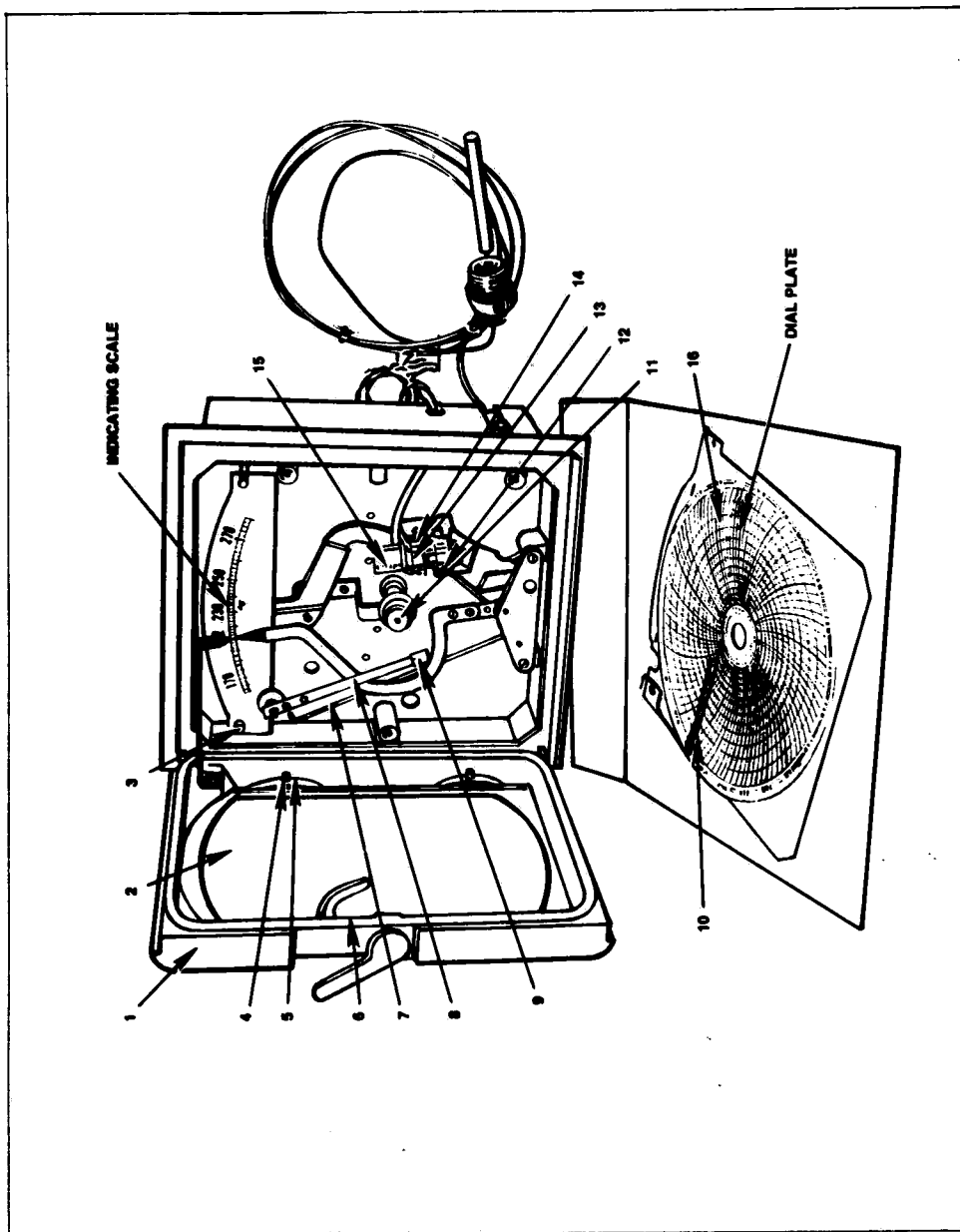


Figure 31. Indicating and Recording Controller (I.R.C.)

Fig. & Index No.	Part Number	Description	Units per Assy.
31-	★★ 30556	Indicating and Recording Controller, Surgical and Formula . . .	1
	★★ 32910	Indicating and Recording Controller, Laboratory Bristol, 6" Charts . . .	1
-1		Frame, Door (No Longer Available) . . . . .	1
-2	P-34854-091	Glass, Door . . . . .	1
-3	P-34901-091	Screw, Special . . . . .	2
-4	P-34856-091	Screw, Clip . . . . .	4
-5	P-34855-091	Clip, Glass . . . . .	4
-6	P-34857-091	Gasket, Door . . . . .	1
-7	P-34900-091	Connector . . . . .	1
-8	P-34861-091	Pen . . . . .	1
-9	P-34859-091	Arm, Pen . . . . .	1
-10	P-34860-091	Lifter, Pen . . . . .	1
-11	P-34902-091	Hub, Chart . . . . .	1
-12	P-34864-091	Strap . . . . .	1
-13	P-34863-091	Bracket . . . . .	1
-14	P-34865-091	Screw, Strap . . . . .	2
-15	P-34862-091	Mercoide Switch (N.O.) . . . . .	1
-16	P-96636-091	Chart, ° F., Surgical Supply and Formula Sterilizers . .	Box of 100
	P-96637-091	Chart, ° C., Laboratory Sterilizers . . . . .	Box of 100
*	P-34883-091	Drive, Chart . . . . .	1
*Not illustrated.		★★Complete recorders 30556 and 32910 are no longer available. Use recorder kit P-759483-001 when replacing recorders.	

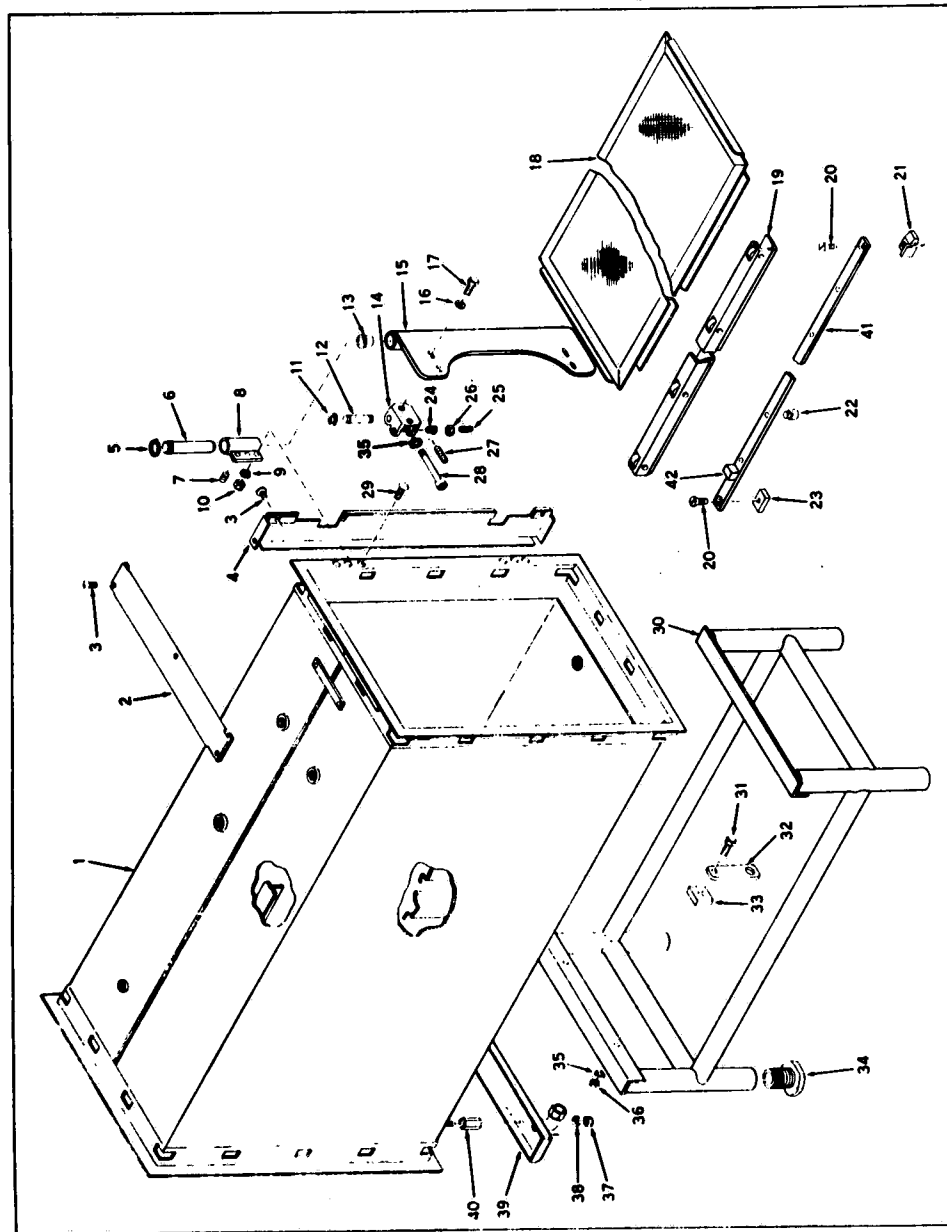


Figure 32. Shell and Related Parts

Fig. & Index No.	Part Number		Description	Units per Assy.	
	Model ME	Model UME		Single Door	Double Door
32-1	42003-10	59062-10	Shell Assy., 24 x 24 x 36 Single Door . . .	1	
	42009-10	59063-10	Shell Assy., 24 x 24 x 36 Double Door . . .		1
	42018-10	59064-10	Shell Assy., 24 x 36 x 36 Single Door . . .	1	
	42015-10	59065-10	Shell Assy., 24 x 36 x 36 Double Door . . .		1
	42030-10	59066-10	Shell Assy., 24 x 36 x 48 Single Door . . .	1	
	42028-10	59067-10	Shell Assy., 24 x 36 x 48 Double Door . . .		1
	42023-10	59068-10	Shell Assy., 24 x 36 x 60 Single Door . . .	1	
	42038-10	59069-10	Shell Assy., 24 x 36 x 60 Double Door . . .		1
-2	P-33100-061	P-38865-010	Top, Finishing jacket . . . . .	1	2
-3	P-10859-041	P-10859-041	Screw, Truss Hd. # 10-32 x 5/16 . . . . .	7	14
-4	P-29695-061	P-38866-010	Side, Finishing jacket (Cut-Out for . . . . . Hinge) 24 x 24 x 36	1	2
	P-29670-061	P-38868-010	Side, Finishing jacket (Cut-Out for . . . . . Hinge) 24 x 36 x 36 - 48 - 60	1	2
	P-30234-061	P-38867-010	Side, Finishing jacket, 24 x 24 x 36 . . . . .	1	2
	P-30235-061	P-38869-010	Side, Finishing jacket, 24 x 36 x 36 - 48 - 60 . . . . .	1	2
-5	P-28394-045	P-28394-045	Ring, Retaining . . . . .	2	4
-6	P-27939-051	P-27939-051	Pin, Hinge bearing . . . . .	2	4
-7	P-9623-041	P-9623-041	Set screw, Cup point, 3/8-16 x 3/8" . . . . .	2	4
-8	P-42057-051	P-42057-010	Bearing, Hinge . . . . .	2	4
-9	P-19680-041	P-19680-041	Lockwasher, 3/8" . . . . .	6	12
-10	P-3099-041	P-3099-041	Nut, Hex, 3/8-16 . . . . .	6	12
-11	P-28395-045	P-28395-045	Ring, Retaining . . . . .	4	8
-12	P-28396-051	P-28396-051	Pin, Adjusting block . . . . .	2	4
-13	P-27906-091	P-27906-091	Bushing (Included with item 15) . . . . .	2	4
-14	P-28408-051	P-28408-010	Block, Adjusting . . . . .	2	4
-15	P-38883-051	P-38871-010	Hinge, Assembly, 24 x 24 x 36 only . . . . .	1	2
	P-38890-051	P-38872-010	Hinge, Assembly, 24 x 36 x 36 - 48 - 60 . . . . .	1	2
-16	P-10441-051	P-10441-051	Washer, Bevel . . . . .	4	8
-17	P-3873-051	P-3873-051	Screw, Hex Hd., 1/2-13 x 1" Lg. . . . .	4	8
-18	P-19144-063	P-19144-063	Shelf Assy., 24 x 24 x 36 Milk Formula . . . . .	2	
	P-30067-063	P-30067-063	Shelf Assy., 1/2 Upper, 24 x 24 x 36 Lab. . . . .	2	2
	P-30069-063	P-30069-063	Shelf Assy., Lower, 24 x 24 x 36 Lab. . . . .	1	1
	P-19144-063	P-19144-063	Shelf Assy., 24 x 36 x 36 Milk Formula . . . . .	3	
	P-30067-063	P-30067-063	Shelf Assy., 1/2 Upper, 24 x 36 x 36 Lab. . . . .	4	4
	P-30069-063	P-30069-063	Shelf Assy., Lower, 24 x 36 x 36 Lab. . . . .	1	1
	P-20398-063	P-20398-063	Shelf Assy., 24 x 24 x 36 Milk Formula . . . . .	3	
	P-30073-063	P-30073-063	Shelf Assy., 1/2 Upper, 24 x 36 x 48 Lab. . . . .	4	4
	P-30071-063	P-30071-063	Shelf Assy., Lower, 24 x 36 x 48 Lab. . . . .	1	1
	P-20399-063	P-20399-063	Shelf Assy., 24 x 24 x 36 Milk Formula . . . . .		2
	P-20399-063	P-20399-063	Shelf Assy., 24 x 36 x 36 Milk Formula . . . . .		3
	P-20400-063	P-20400-063	Shelf Assy., 24 x 36 x 48 Milk Formula . . . . .		3

Fig. & Index No.	Part Number		Description	Units per Assy.	
	Model ME	Model UME		Single Door	Double Door
32-19	P-13541-061	P-13641-061	R.H. Shelf Support Assy., 24 x 24 x 36 . . Formula	2	
	P-13542-061	P-13542-061	L.H. Shelf Support Assy., 24 x 24 x 36 . . Formula	2	
	P-30062-061	P-30062-061	Shelf Support, 24 x 24 x 36 Lab. . . . .	4	
	P-13541-061	P-13541-061	R.H. Shelf Support Assy., 24 x 36 x 36 . . Formula	3	
	P-13642-061	P-13642-061	L.H. Shelf Support Assy., 24 x 36 x 36 . . Formula	3	
	P-30062-061	P-30062-061	Shelf Support, 24 x 36 x 36 Lab. . . . .	6	
	P-13543-061	P-13543-061	R.H. Shelf Support Assy., 24 x 36 x 48 . . Formula	3	
	P-13544-061	P-13544-061	L.H. Shelf Support Assy., 24 x 36 x 48 . . Formula	3	
	P-30061-061	P-30061-061	Shelf Support, 24 x 36 x 48 Lab. . . . .	6	
	P-30036-061	P-30036-061	Shelf Support Assy., 24 x 24 x 36 Formula		4
	P-30065-061	P-30064-061	Shelf Support, 24 x 24 x 36 Lab. . . . .		4
	P-30036-061	P-30036-061	Shelf Support Assy., 24 x 36 x 36 Formula		6
	P-30064-061	P-30064-061	Shelf Support, 24 x 36 x 36 Lab. . . . .		6
	P-30038-061	P-30038-061	Shelf Support Assy., 24 x 36 x 48 Formula		6
	P-30063-061	P-30063-061	Shelf Support, 24 x 36 x 48 Lab. . . . .		6
-20	P-39915-061	P-39915-061	Screw, Flat Hd., 3/8-16 x 5/8" Lg. . . .	4	4
-21	P-39844-061	P-39844-061	Track Block Assy., Left hand . . . . .	1	1
	P-39845-061	P-39845-061	Track Block Assy., Right hand . . . . .	1	1
	P-40113-061	P-40113-061	Track Block Assy., Left hand . . . . .		1
	P-40114-061	P-40114-061	Track Block Assy., Right hand . . . . .		1
-22	P-32017-061	P-32017-061	Pin, Track Support . . . . .	AR	AR
	P-35342-061	P-35342-061	Pin, Track Support . . . . .	AR	AR
	P-35343-061	P-35343-061	Pin, Track Support . . . . .	AR	AR
-23	P-20082-061	P-20082-061	Track Block, Rear . . . . .	2	
-24	P-27929-091	P-27929-091	Cap, Hinge Block . . . . .	2	4
-25	P-32244-091	P-32244-091	Setscrew, Half Dog, 1/2-13 x 1-3/4" . .	2	4
-26	P-13397-041	P-13397-041	Nut, Hex, 1/2-13 . . . . .	2	4
-27	P-28399-041	P-28799-041	Setscrew, Cup Point, 1/2-13 x 3" Lg. . .	2	4
-28	P-14529-045	P-14529-045	Screw, Soc. Hd., 1/2-13 x 4-1/2 . . . .	2	4
-29	P-28397-061	P-28397-061	Bolt, Carriage, 3/8-16 x 1-1/4" . . . .	6	12
-30	P-29685-010	P-29685-010	Stand Assy., 24 x 24 x 36 and 24 x 36 x 36 .	1	1
	P-29669-010	P-29669-010	Stand Assy., 24 x 36 x 48 . . . . .	1	1
	P-29684-010	P-29684-010	Stand Assy., 24 x 36 x 60 . . . . .	1	1
-31	P-3875-041	P-3875-041	Capscrew, Hex Hd., 1/2-13 x 1-3/4" . .	4	4
-32	P-41512-010	P-41512-010	Support, Pipe, 24 x 24 x 36 and 24 x 36 x 36	1	
	P-41513-010	P-41513-010	Support, Pipe, 24 x 36 x 48 . . . . .	1	
	P-41514-010	P-41514-010	Support, Pipe, 24 x 36 x 60 . . . . .	1	
	P-43047-010	P-43047-010	Support, Pipe, (All Shells) . . . . .		1

Fig. & Index No.	Part Number		Description	Units per Assy.	
	Model ME	Model UME		Single Door	Double Door
32-33	P-33546-091	P-33546-091	Plate, Holding . . . . .	4	4
-34	P-10933-031	P-10933-031	Flange, Floor . . . . .	4	4
-35	P-19681-045	P-19681-045	Lockwasher, 1/2 (3/32" Thick) . . . . .	6	8
-36	P-3101-045	P-3101-045	Nut, Hex, 1/2-13 . . . . .	4	4
-37	P-8648-061	P-8648-061	Nut, Hex, 1/4-20 . . . . .	3	6
-38	P-19686-061	P-19686-061	Lockwasher, 1/4" . . . . .	3	6
-39	P-37979-045	P-37979-045	Trough Assembly . . . . .	1	2
-40	P-37982-045	P-37982-045	Spacer, Trough . . . . .	3	6
-41	P-22411-061	P-22411-061	Track, 24 x 24 x 36 and 24 x 36 x 36 . . .	2	
	P-22475-061	P-22475-061	Track, 24 x 24 x 36 and 24 x 36 x 36 . . .		2
	P-20079-061	P-20079-061	Track, 24 x 36 x 48 . . . . .	2	
	P-22477-061	P-22477-061	Track, 24 x 36 x 48 . . . . .		2
	P-20080-061	P-20080-061	Track, 24 x 36 x 60 . . . . .	2	
	P-22476-061	P-22476-061	Track, 24 x 36 x 60 . . . . .		2
-42	P-33476-061	P-33476-061	Stop, Car . . . . .	2	
*	P-33091-061	P-33091-061	Baffle, Steam . . . . .	1	
*	P-33096-061	P-33096-061	Baffle, Steam . . . . .		1
*Parts not illustrated.					

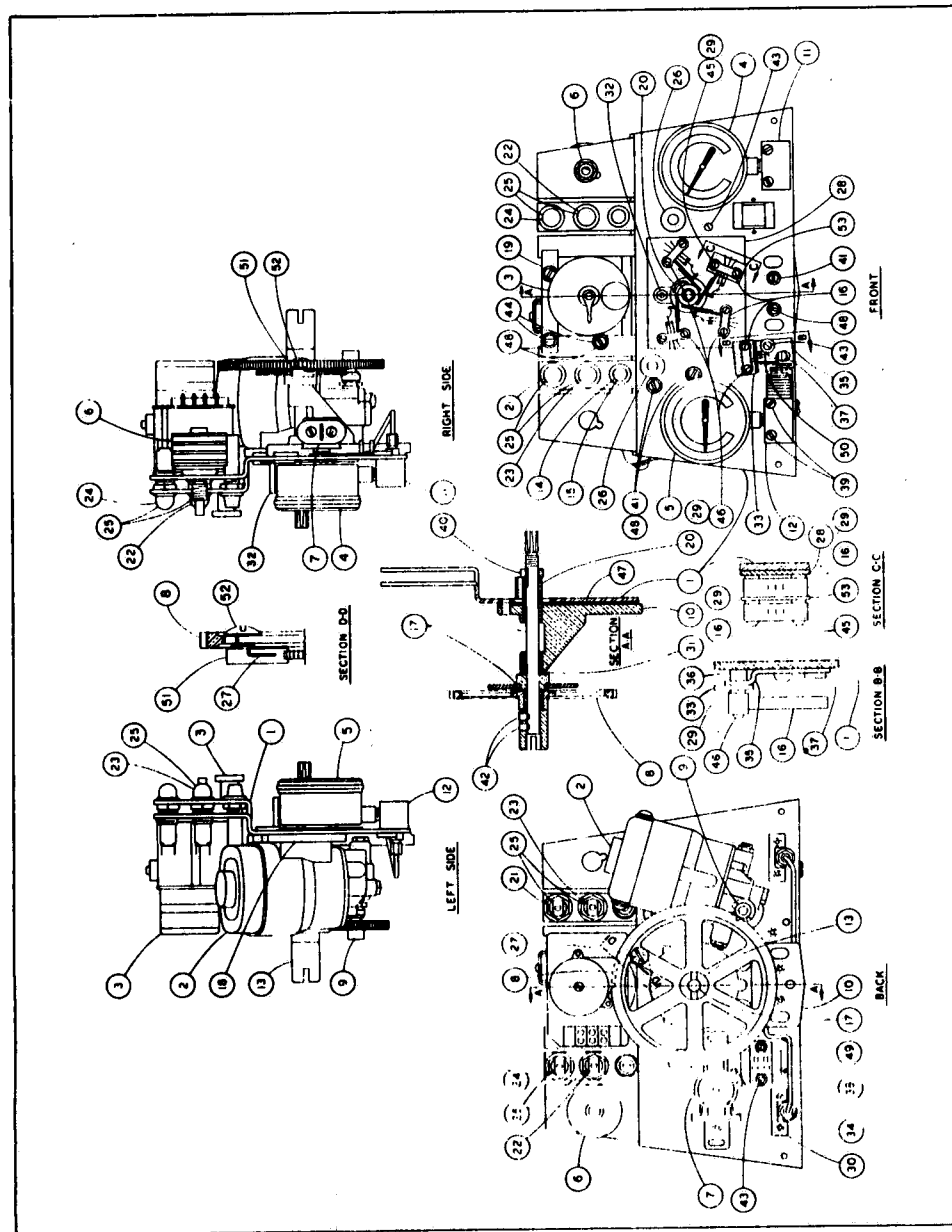


Figure 33. Chassis Assembly

Fig. & Index No.	Part Number	Description	Units per Assy.
33-	P-24574-091	Chassis Assembly, Cyclomatic Control (Includes items 1 thru 53)	1
-1	P-24578-045	Chassis	1
-2	P-51549-091	Motor, Electric	1
-3	P-24579-091	Timer, Reset	1
-4	P-7871-091	Gauge, Jacket	1
-5	P-7872-091	Gauge, Chamber	1
-6	P-28562-091	Switch, Selector	1
-7	P-79739-001	Buzzer	1
-8	P-29883-091	Gear, Driven	1
-9	P-20337-091	Gear, Pinion	1
-10	P-20564-091	Bracket Assembly	1
-11	P-20567-091	Connection, Gauge	1
-12	P-20560-091	Bellows Assembly	1
-13	P-20570-044	Coupling	1
-14	P-20340-091	Holder, Fuse	2
-15	P-20341-091	Fuse, 1/2 amp	2
-16	P-20332-091	Switch, Snap	6
-17	P-33597-045	Shaft Assembly	1
-18	P-20578-045	Spacer, Motor	2
-19	P-24584-045	Bar, Timer	1
-20	P-25160-061	Cam Assembly	1
-21	P-24568-091	Light, Pilot, red	1
-22	P-24569-091	Light, Pilot, amber	1
-23	P-24570-091	Light, Pilot, yellow	1
-24	P-24571-091	Light, Pilot, clear	1
-25	P-23883-091	Lamp, Ne-51	4

Fig. & Index No.	Part Number	Description	Units per Assy.
33-26	P-20843-091	Grommet . . . . .	2
-27	P-34558-091	Spring, Pawl . . . . .	1
-28	P-20713-091	Plate, Insulator . . . . .	1
-29	P-26082-091	Washer . . . . .	12
-30	P-20738-042	Plate . . . . .	2
-31	P-10412-042	Washer . . . . .	1
-32	P-20723-091	Post . . . . .	1
-33	P-20722-091	Plate, Insulator . . . . .	1
-34	P-20344-044	Fitting, Compression . . . . .	2
-35	P-20717-061	Plate, Switch mounting . . . . .	1
-36	P-20719-091	Pin . . . . .	1
-37	P-20721-091	Pin, Adjusting . . . . .	1
-38	P-20334-091	Plug, 4 pole . . . . .	1
-39	P-12175-045	Screw, 10-32 x 1-1/4" . . . . .	4
-40	P-10583-091	Setscrew, 10-32" . . . . .	1
-41	P-75242-045	Screw, 10-32 x 5/8" . . . . .	6
-42	P-41101-091	Setscrew, 1/4-20", Nylok . . . . .	2
-43	P-12451-091	Screw, 6-32 x 1/4" . . . . .	3
-44	P-9298-041	Screw, 10-32 x 1/2" . . . . .	5
-45	P-26034-045	Screw and Lockwasher 5-40 x 1" (Sema) . . . . .	2
-46	P-26033-045	Screw and Lockwasher 5-40 x 9/16" (Sema) . . . . .	8
-47	P-26031-091	Gasket . . . . .	1
-48	P-19677-041	Lockwasher, No. 10 . . . . .	7
-49	P-19675-041	Lockwasher, No. 6 . . . . .	2
-50	P-20844-061	Washer, Plain, No. 6 . . . . .	1
-51	P-29692-045	Pawl . . . . .	1
-52	P-36901-044	Screw, Truss Hd., 1/4-28 x 1/2" . . . . .	1
-53	P-25394-091	Plate, Insulator . . . . .	1

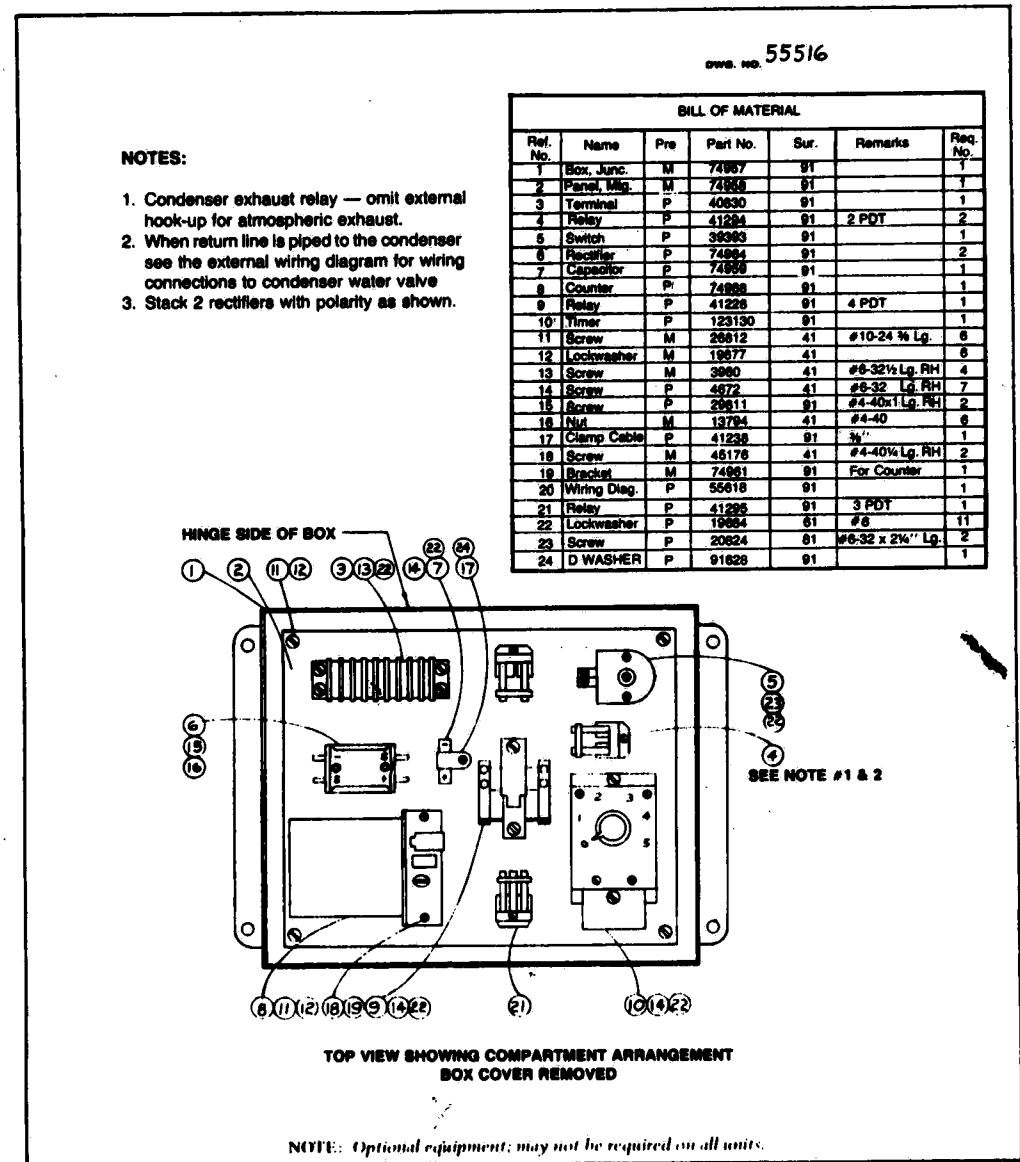


Figure 34. Control Box Assembly  
(Quick Heat Come Up)





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## STEAM STERILIZER MODELS ME & UME

(8/79)

P-750104-002

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