AMSCO Maintenance Manual

CAN-O-GAS STERILIZER
10x16" Portable **Series 8040**
(4/84) **P-751466-091**

AMSCO | AMERICAN STERILIZER COMPANY • 8[illegible]3/4 STREET • AMSCO 4078 • ERIE • PENNSYLVANIA 16514
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SAFETY PRECAUTIONS

The following are personnel (WARNINGS) and equipment (CAUTIONS) **safety precautions** to be observed when operating or servicing this Sterilizer.

WARNING **EXPLOSION HAZARD: THIS EQUIPMENT IS DESIGNED TO USE A MIXTURE OF 12% ETHYLENE OXIDE AND 88% FREON GAS (BY WEIGHT) AS THE STERILIZING AGENT. THE USE OF ANY OTHER MIXTURE COULD CAUSE AN EXPLOSION HAZARD OR COULD RENDER THE RECOMMENDED OR DESIGNED STERILIZATION PROCESS INEFFECTIVE.**

WARNING **THE ETHYLENE OXIDE STERILANT USED WITH THIS STERILIZER HAS TOXIC PROPERTIES. USE CARE IN HANDLING. SEE ALSO AMSCO PUBLICATION DB-3002 (P-62942-091).**

1. AVOID SPRAYING STERILANT ON HANDS, FACE, EYES OR OTHER SKIN AREAS. IF CONTACT IS MADE, PROMPTLY WASH AFFECTED AREAS WITH WATER. GET MEDICAL ATTENTION AT ONCE IF STERILANT HAS CONTACTED EYES.

2. IF SPRAYED WITH THE STERILANT, REMOVE AND WASH THE AFFECTED CLOTHING BEFORE REUSE.

3. AVOID BREATHING EXCESS AMOUNTS OF VAPORS ... IF A SUFFICIENT QUANTITY IS INHALED THESE VAPORS CAN CAUSE HEADACHE AND NAUSEA. IF THESE SYMPTOMS ARE EXPERIENCED, SEEK FRESH AIR, LIE DOWN UNTIL SYMPTOMS DISAPPEAR. DO NOT USE STIMULANTS.

4. AREA IN WHICH ETHYLENE OXIDE IS STORED AND USED SHOULD BE WELL VENTILATED AND MAINTAINED AT APPROXIMATELY 70 TO 100 F (21 TO 38 C).

5. REFER TO MANUFACTURER'S RECOMMENDATIONS SUPPLIED WITH GAS CYLINDERS.

6. PRIOR TO STARTING A CYCLE, CHAMBER DOOR(S) MUST BE SUFFICIENTLY SEALED TO PREVENT GAS LEAKS.

7. FOLLOW ALL OPERATING INSTRUCTIONS PRECISELY.

WARNING **SOME ETHYLENE OXIDE REMAINS IN GOODS FOLLOWING STERILIZATION. ASK YOUR SUPERVISOR FOR AERATION INSTRUCTIONS.**

MOST MATERIALS, FOLLOWING GAS STERILIZATION, RETAIN SOME ETHYLENE OXIDE WHICH MAY BE HAZARDOUS TO HUMANS. THUS MATERIALS MUST BE AERATED.

THE RATE OF DESORPTION OF THE ETHYLENE OXIDE WILL VARY DEPENDING ON THE MATERIAL, GEOMETRY OF THE ARTICLE, TEMPERATURE, AND OTHER PHYSICAL PARAMETERS. THEREFORE, A SINGLE ACCEPTABLE AERATING TECHNIQUE CANNOT BE CITED FOR ALL GOODS.

A PROPERLY DESIGNED MECHANICAL AERATING CHAMBER IS RECOMMENDED TO REDUCE TIME NORMALLY REQUIRED BY THE OPEN—SHELF METHOD. HOWEVER, JUDGEMENT OF PROPER AERATING TIME MUST REST WITH RESPONSIBLE MEDICAL PERSONNEL. IT IS IMPORTANT THAT SUCH PERSONNEL INSTRUCT STERILIZER OPERATORS CONCERNING ADEQUATE AERATION OF GOODS FOLLOWING GAS STERILIZATION.

WARNING **DO NOT ATTEMPT TO OPEN OR UNLOCK STERILIZER DOOR BEFORE COMPLETION OF THE PROGRAMMED EXHAUST PHASE AS ETHYLENE OZIDE COULD ESCAPE AND CAUSE INJURY.**

WARNING **BE SURE TO PRESS THE POWER AND CONTROL SWITCHES TO OFF AND WAIT UNTIL CHAMBER COOLS TO ROOM TEMPERATURE BEFORE STARTING ANY MAINTENANCE OPERATIONS.**

WARNING **ETHYLENE OXIDE CAN BE HARMFUL SHOULD IT COME IN CONTACT WITH THE BODY. WHEN CHANGING GAS CYLINDERS, HANDLE THE HOSE CAREFULLY SO AS NOT TO SPILL ANY RESIDUAL LIQUID STERILANT. SEE SECTION 2 AND AMSCO PUBLICATION DB-3002 (P-62942-091).**

WARNING **DO NOT OPEN THE GAS SUPPLY FILTER ASSEMBLY UNTIL IT IS CERTAIN THAT ALL GAS PRESSURE HAS BEEN BLED OUT.**

CAUTION: **Take care to prevent grease from getting into vacuum pump motor windings. Never lubricate motor while it is operating.**

CAUTION: **Never use wire brush or steel wool on door and chamber assembly.**

CAUTION: **When using AMSCO Stainless Steel Cleaner and Polish or AMSCO Pry Cleaner, rub in a back and-forth motion (in the same direction as the surface grain). Do not rub with a rotary or circular motion. Do not use these cleaners on painted surfaces. Follow directions on containers.**

INTRODUCTION

This manual contains information for installation, servicing, adjustment, trouble shooting, repair and parts lists for American Portable Can-O-Gas Sterilizer.

Sterilizer is a vacuum-pressure type designed for sterilization of heat or moisture sensitive items as paper forms, rubber, plastic, muslin, gauze, glass and leather products, utilizing a gas mixture sterilizing agent.

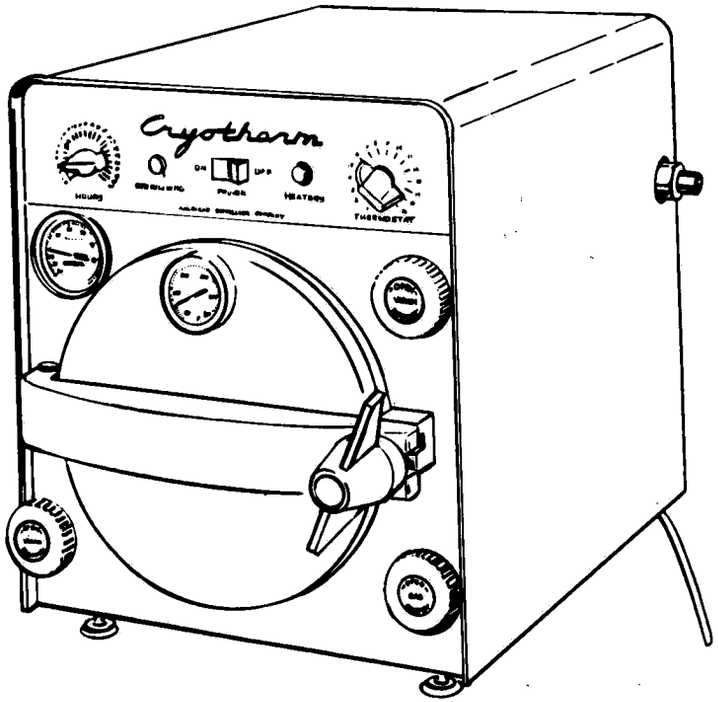


Figure 1. 10 x 16 Portable Can-O-Gas Sterilizer

CHAPTER I
STERILIZER DATA

Overall length	23 inches
Overall width	19 inches
Jacket height (counter to top)	18 inches
Overall height to top of Cry-Oxcide can	27 inches
Power requirements	120 volts, 60 Hz 4.5 Amps
Source of vacuum requirements	Heavy duty Vacuum Pump with 1/3 H.P. Motor or "operators built-in" vacuum line at location of sterilizer capable of drawing a 28" (Hg.) vacuum.
Gas sterilization requirement	One can Cry-Oxcide Gas (1 pound 5 oz. total weight)
Weight	65 pounds

Table of Leading Particulars

CHAPTER II
INSTALLATION

PERSONNEL OPERATING THIS EQUIPMENT SHOULD HAVE COMPLETED INSTRUCTION IN ALL PARAMETERS OF ETHYLENE OXIDE GAS STERILIZATION AND AERATION. RESPONSIBLE SUPERVISION MUST BE PROVIDED.

1. Follow the recommendations of the equipment manufacturer for proper operation and maintenance of the equipment.

2. Be sure ventilation/exhaust system is working properly.

- Sterilizers and aerators should be installed in an area that has at least 10 air changes per hour as stipulated in most building codes, or provide a suitable equivalent exhaust system.
- Sterilizers should be vented directly to the outside, if a suitable exhaust system is not provided.
- Aerators should be vented directly to the outside.

3. Avoid direct contact with sterilant or excessive inhalation of its vapors.

- When sterilizing cycle is complete, open door approximately 6 inches and wait at least 10 minutes before removing load from sterilizer.
- Wear protective gloves if processed items must be handled (use loading car if possible).

4. When changing gas containers, **avoid contact with any liquid sterilant that may remain in the connecting lines and avoid prolonged or acute exposure to the gas vapor.**

5. Gas containers (both those in use and those in storage) should be out of the way of traffic and be securely fastened. Storage temperature should not exceed 100 F.

USE ONLY NONFLAMMABLE/NONEXPLOSIVE GAS MIXTURES.

1. Remove sterilizer from shipping carton and inspect for any damage incurred while in transit from factory. Check finish and general appearance.

2. Sterilizer is designed for firm table or counter mounting and may be located anywhere in the laboratory where there is access to a vacuum line.

3. Connect source of vacuum to 3/8" N.P.S. union female connection located on right side near back of sterilizer. It is recommended that a suitable rubber hose assembly (Amsco Part No. 45312 - 3/8" male pipe connections each end - 18" long) be used here to minimize transfer of pulsations and vibrations from vacuum line or vacuum pump to sterilizer.

4. Insert 3 prong plug on sterilizer line cord in standard 115 volt grounding receptacle if available. If a standard two prong 115 volt outlet receptacle is used insert 3 prong plug on sterilizer line cord in grounding adapter supplied with sterilizer. Insert grounding adapter in receptacle and connect terminal on adapter to "ground" with metal screw holding cover plate to outlet receptacle.

5. Adjust legs so front of sterilizer is 1/2 inch higher than back.

CHAPTER III
OPERATING INSTRUCTIONS

WARNING

THE ETHYLENE OXIDE STERILANT USED WITH THIS STERILIZER HAS TOXIC PROPERTIES.

USE CARE IN HANDLING.

1. **AVOID SPRAYING STERILANT ON HANDS, FACE, EYES OR OTHER SKIN AREAS. IF CONTACT IS MADE, PROMPTLY WASH AFFECTED AREAS WITH WATER. GET MEDICAL ATTENTION AT ONCE IF STERILANT HAS CONTACTED EYES.**

2. **IF SPRAYED WITH THE STERILANT; WASH THE INFECTED CLOTHING BEFORE REUSE.**

3. **AVOID BREATHING EXCESS AMOUNTS OF VAPORS ... IF INHALED SUFFICIENTLY, THESE VAPORS CAN CAUSE HEADACHE AND NAUSEA. IF THESE SYMPTOMS ARE EXPERIENCED, SEEK FRESH AIR. LIE DOWN UNTIL SYMPTOMS DISAPPEAR. DO NOT USE STIMULANTS.**

4. **AREA IN WHICH ETHYLENE OXIDE IS STORED AND USED SHOULD BE WELL VENTILATED (BETWEEN 8 AND 12 AIR CHANGES PER HOUR) AND MAINTAINED AT APPROXIMATELY 70 TO 100 F.**

5. **REFER TO MANUFACTURER'S RECOMMENDATIONS SUPPLIED WITH GAS CONTAINERS.**

To assure efficient operation and positive sterilization, the following procedure should be followed:

1. Adjust legs so front of sterilizer is 1/2 inch higher than back. Vacuum Exhaust Valve must be connected to vacuum source.

2. Plug line cord into electric outlet of 110-120 volts, 60 Hz, A.C. only.

INITIAL OPERATION

3. Close door pressure tight. All valves must be closed.

4. Snap power switch to "On" position. Red pilot light will glow to indicate that heaters are on.

5. Set Heaters Thermostat Knob to position No. 5. This setting will produce the recommended average chamber temperature of 130° F. ± 5° (54° C. ± 3°). Time the preheat period by setting timer for one hour; white pilot light will glow, indicating timer is operating. At the completion of one hour, preheating of chamber, white pilot light goes off.

6. Open door. Place shelf in level position inside chamber. Slot in bent up flange at rear of shelf fits over gas inlet bushing and prevents shelf from tilting.

ARRANGEMENT OF LOAD

7. All articles should be as clean as possible before sterilization. Wrap heat or moisture sensitive items as paper forms, rubber, plastic, leather, glass objects, electronic instruments and components, etc., in muslin, kraft paper, steri-wrap paper or enclose in polyethylene bags of 1.0 to 3.0 mil thickness. Place on shelf in chamber. Do not overload chamber; always assure adequate gas circulation with every part of the load.

8. Moisturization of chamber is accomplished by placing 1/2 ounce (15 ml.) of water on bottom of chamber. Use distilled water only.

9. Close door pressure tight, but do not force.

STERILIZING PROCEDURES

10. To sterilize all materials source of vacuum must be in operation. Open "Vacuum Exhaust" valve and draw initial vacuum on chamber. When pointer on vacuum-pressure compound gauge indicates 26" vacuum, close "Vacuum Exhaust" valve.

11. Check to be sure all valves are closed.

Place can of gas on puncturing device by inverting can and sliding rim of can in groove at top of knurled clamp. Turn clamp and can to left until tight to puncture can. Open gas valve located at top of sight glass; fill sight glass to level indicated for desired exposure period.

(A) In General: For fast sterilization of all items except plastics and any items made up in part with plastic material; a full sight glass of Cry-Oxcide Gas for 3 hour exposure period at 18 PSI chamber pressure. Close top gas valve.

(B) For sterilizing plastics such as "Lucite," "Plexiglas" and "Polystyrene," or slow sterilization of all other items: Admit Cry-Oxcide Gas into sight glass to level indicated for 6 hour exposure period at 5 PSI chamber pressure. Close top gas valve.

When processing plastics: Do not exceed chamber temperature of 130° F. (54° C.).

12. Set timer for one half hour by turning past 2 hr. and back to 1/2 "Humidity Dwell" period for moisture to vaporize and diffuse through load. White pilot light will glow. At completion of "Humidity Dwell" period white pilot light will go "Off."

13. Open "Gas Supply" valve to chamber until sight glass is empty. Close "Gas Supply" valve.

14. Set timer to selected exposure period. White sterilizing pilot light will glow. When exposure cycle is completed white pilot light goes off.

15. Source of vacuum must be in operation. Switch Vacuum Pump on or open auxiliary vacuum line valve if "built-in vacuum line is available.

Open sterilizer "Vacuum Exhaust" valve and draw terminal vacuum on chamber, when pointer on vacuum-pressure compound gauge indicates 26" vacuum close "Vacuum Exhaust" valve. Open Vacuum Breaker" valve; when chamber pressure reached zero, as indicated on compound gauge, open door. Close "Vacuum Breaker" valve. Remove processed items from chamber. Snap power switch to "Off" position; red pilot light will go off.

WARNING: SOME ETHYLENE OXIDE REMAINS IN GOODS FOLLOWING STERILIZATION (SEE BELOW). ASK YOUR SUPERVISOR FOR AERATION INSTRUCTIONS.

AERATION OF GOODS FOLLOWING STERILIZATION WITH ETHYLENE OXIDE

Most materials, following gas sterilization, retain some ethylene oxide which may be hazardous to humans.

Human tolerances to residual ethylene oxide will vary depending upon the individual, the materials and their application. Therefore, a single acceptable aerating technique cannot be cited for all situations.

Following gas sterilization, materials must be aerated in either a properly designed aerating chamber (recom-

mended) or in a well-ventilated area at room temperature. Some medical institutions aerate such materials on open shelving for 24 hours; aeration for as long as seven days has been reported. Most of the latter cases involved Pacemakers*, artificial heart valves and similar devices in direct contact with body organs.

Judgment of the proper aerating technique, therefore, must rest with responsible medical personnel. It is important that such personnel instruct sterilizer operators concerning adequate aeration of goods following gas sterilization.

*Electrodyne, Division of Becton, Dickinson & Co.

AERATION OF EXPOSED MATERIALS

16. It is recommended that for rapid removal of ethylene oxide, exposed materials be placed in an area or chamber capable of maintaining 120°F. with a full load and having a good air circulation or transfer system, for approximately eight (8) hours.

Otherwise the exposed materials should be aerated for at least twenty-four (24) hours in a well ventilated area at room temperature.

CHAPTER IV
MAINTENANCE

INSPECTION AND ADJUSTMENT

1. Inspection. Inspect exterior of sterilizer for any loose or missing parts. Tighten any loose screws or nuts. Replace missing parts.

2. Check for fit and alignment of thermometer on chamber door.

3. Check for fit and tightness of timer shaft, thermostat shaft, pilot lights, power switch, compound gauge and valve extension rods with handwheels in openings of the front panel.

4. Door: Check fit with nose of shell. Hinge Barlock: Check fit with hinge blocks. Eye Bolt: Check fit with door handwheel assembly. Door Gasket: Should fit snugly in door gasket groove.

5. General Appearance. Check appearance of front panel, metal-cal plate on front panel and all markings.

6. To repair or replace parts inside finishing jacket. Remove screws (18 Fig. 9) securing sight glass bracket (16 Fig. 9) to finishing jacket. Loosen pipe fitting union nut (15 Fig. 9). Remove complete sight glass assembly from side of sterilizer jacket. Remove six screws (9 Fig. 5) holding jacket (25 Fig. 5) to base (6 Fig. 6). Remove finishing jacket.

7. Electrical Connections. Check for tightness. Lead Wires. Check for proper position.

8. Check heaters, thermoswitch, terminal block and power switch bracket for proper and secure assembly.

9. Check all pipe and pipe fittings for tightness of connections. Check tubing for ruptures.

10. Determine if sterilizer is gas tight. Run complete operating cycle per operating instructions (Chapter III). Any discrepancies should be corrected in accordance with Trouble Shooting Section.

11. Thermostat Control Knob. Inspect and adjust. Flexible shaft (18 Fig. 6) connects shaft on thermoswitch (19 Fig. 6) with shaft and knob on front panel. Turn shaft on thermoswitch counterclockwise all the way. Set pointer on knob (21 Fig. 5) to No. 1 on thermostat dial, tighten knob set screw.

12. Timer Knob. Adjust for proper setting on 24 hour timing dial on front panel.

LUBRICATION

1. Lubricate with machine oil: Hinge pins, lock bolt pin and threads on door handle at initial operation and approximately once every 3 months thereafter.

2. Add lubrication (Lubriplate 630-AA or Plastilube EP) to all threads of the eyebolt (5 Fig. 10) on the handwheel assembly.

To gain access to the eyebolt threads, loosen the setscrew (3 Fig. 10) with an Allen wrench. Rotate the hub (1, Fig. 10) to expose the threads. After lubricating threads, turn in setscrew flush with outside surface and to engage groove in spacer assembly (4, Fig. 10).

3. Use of the correct oil and proper amount of oil is important on all Gast units requiring lubrication. Excessive lubrication rarely does as much harm as inadequate lubrication.

The following high detergent lubricants are recommended for use in Gast units requiring lubrication.

	SAE #10 For Ambients Below 100°F	SAE #20 For Ambients Above 100°F
GAST	AD220	
CITGO	C-110	C-120
GULF	Gulflube HD 10	Gulflube HD 20
HUMBLE	Encolube HDX 10	Encolube HDX 20
MOBIL	Delvac 1110	Delvac 1120
SHELL	Rotella 10	Rotella 20
SINCLAIR	S-1 #10	S-1 #20
SUN	Sunvis 610	Sunvis 620
TEXACO	URSA S-1 #10	URSA S-1 #20

Gast Pneumatic lubricant (AD 220) is available in convenient quart containers from the factory (stocked under AMSCO Part No. 78663-91).

Substitutions —

If none of the above oils are available, use an equivalent oil having a military specification of MIL-L-2104B, Supplement No. 1.

For installations in warm climates or where room temperatures are high, increase the viscosity equivalent to SAE 20. For installations below freezing, dilute oil with one-fourth or less kerosene.

Re-using oil is not recommended.

Turn the pump off while filling. Use a slender spout oil can. Do not fill above equalizer hole in reservoir's stem. If oil enters stem, allow the pump to operate several minutes before replacing cap, or an air lock may develop in the reservoir and therefore oil would **not** flow to the pump.

Vacuum pumps, with the vacuum lubricator, will automatically lubricate the bearings when the pump operates above 4" Hg vacuum.

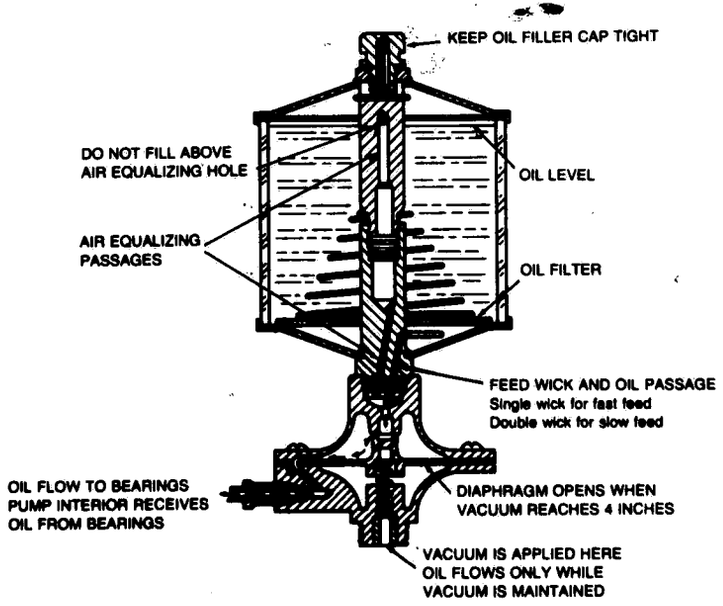


Figure 2. Lubricating Vacuum Pump.

CHAPTER V
CONTROL SYSTEMS

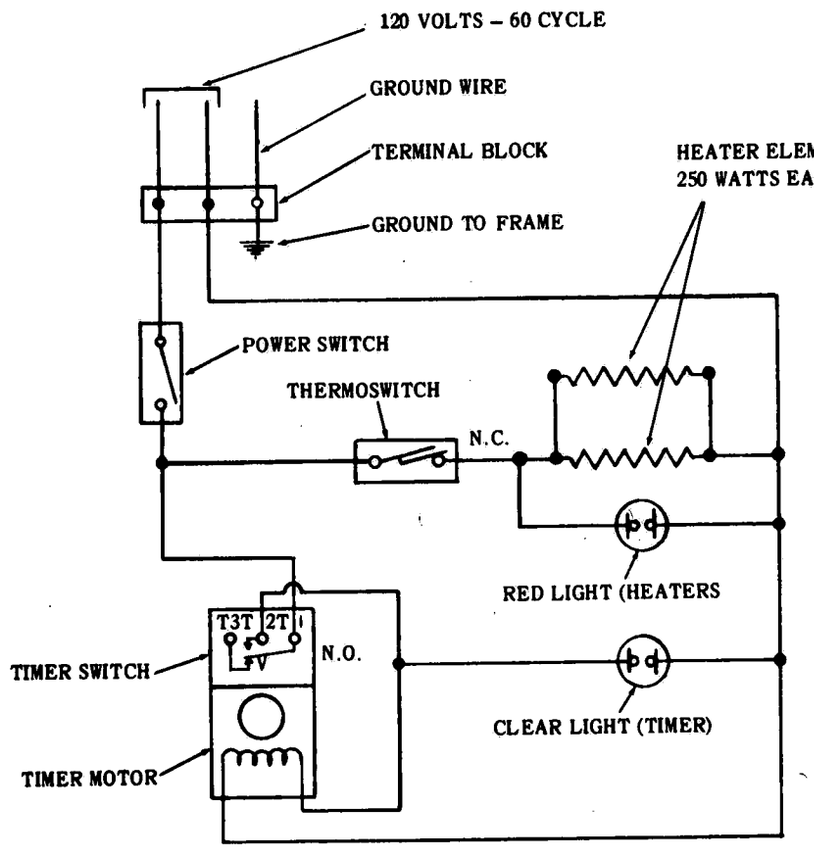
ELECTRICAL CONTROL SYSTEM

A schematic diagram of the electrical system for the 1016 Portable Can-O-Gas Sterilizer is shown in Figure 3. Two 250-watt, conductive-type heater elements are attached to the outside of the chamber wall. Heater elements are thermostatically controlled to maintain temperature of gas in the chamber for maximum efficiency of the gas sterilizing agent. Power supply to heater elements and timer is controlled by a snap switch. With power "on" red pilot light glows. Thermoswitch setting is controlled by "Thermostat Knob" on front panel. When pre-set temperature is reached thermoswitch "opens," power to heaters is cut off until chamber starts to cool. Then thermoswitch closes to maintain an even pre-set heat.

Timer (24 hour) is used to time : 1. Preheat period, 2. Humidity dwell period and 3. Gas sterilization exposure period. Set timer knob to length of time desired, clear (timer) pilot light will glow. At completion of timer setting clear pilot light will go OFF. Timer must always be turned past "2 hr." then set to desired time.

At completion of sterilizing cycle snap power switch to "Off" position. Red pilot light will go off.

The line cord is three-wire type. Two wires are for 120 volt, 60 Hz power supply. The third wire is connected to a standard grounding plug at one end and grounded to the frame of the sterilizer at the other end.



10 x 16 Portable Can-O-Gas Sterilizer

Figure 3. Wiring Diagram

CHAPTER V
CONTROL SYSTEMS

MANUAL CONTROL SYSTEM

A schematic diagram of the Portable Can-O-Gas Sterilizer piping system for gas charging, initial vacuum, terminal vacuum and vacuum breaker functions is shown in Figure 4. All valves are normally closed.

A gas charging manifold with sight glass is filled to the level indicated by placing "Can-O-Gas" on puncturing device and opening top gas charging valve.

Initial vacuum or terminal vacuum is drawn on the chamber by opening "Vacuum Exhaust" Valve with source of vacuum in operation.

To break vacuum in the chamber, open "Vacuum Breaker" Valve. Air enters the air maze silencer, flowing through the vacuum breaker valve and bacteria retentive filter to chamber.

Cry-Oxcide Gas is admitted to the sterilizer chamber by opening the "Gas Supply" Valve.

The compound pressure gauge indicates vacuum or pressure in the chamber.

The safety valve set at 33 PSI protects the sterilizer from excessive internal pressure.

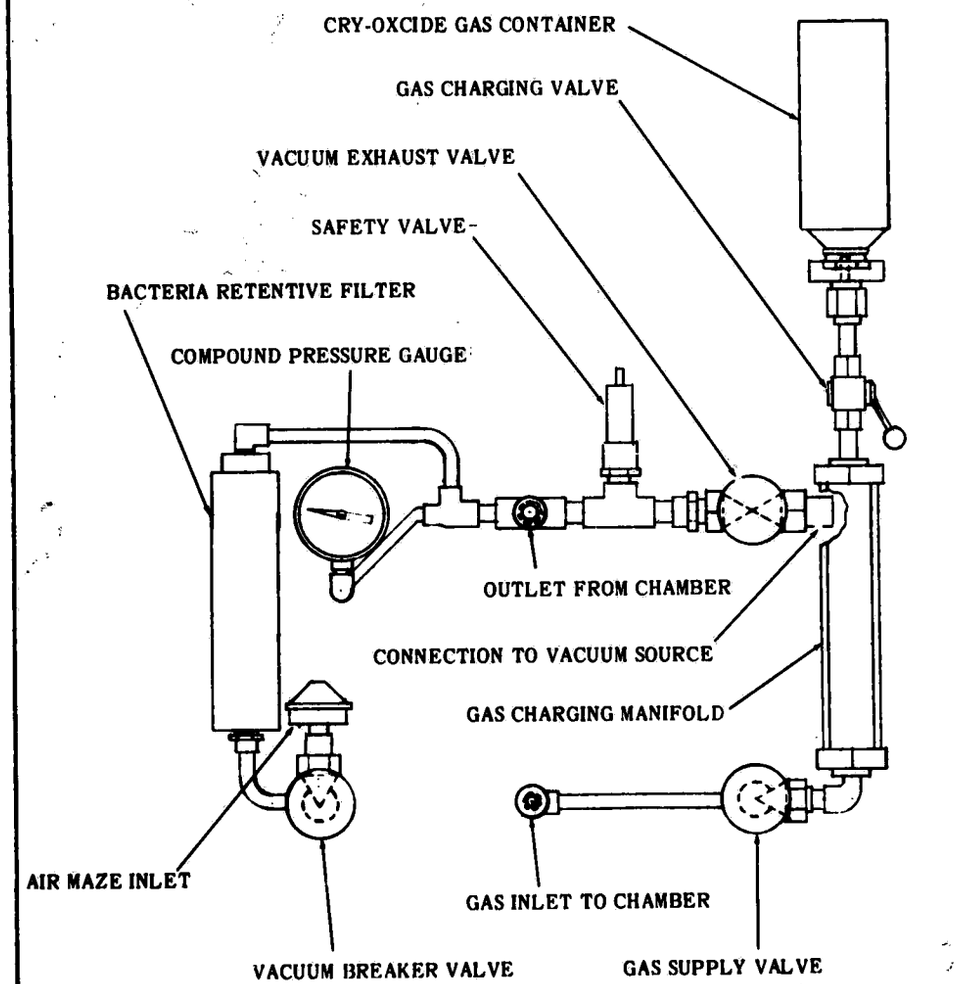


Figure 4. Schematic Piping Diagram

CHAPTER VI TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	POSSIBLE REMEDY
No power to electrical control system	Blown fuse in supply line or circuit breaker "open"	Check for power at outlet, replace fuse or reset circuit breaker
	Defective line cord	Check cord for cuts or breaks, replace if defective
	Loose or broken electrical connection	Replace or tighten electrical connection
No heat	Defective thermoswitch	Replace thermoswitch
	Defective heater elements	Replace heater elements
Low heat at any thermostat setting	One heater element defective	Replace heater element
High heat at any thermostat setting 5 to 13	Defective thermoswitch Thermostat knob incorrectly set	Replace thermoswitch Set knob correctly
Timer does not operate	Broken electrical connection	Replace or tighten connection
	Defective timer	Replace timer
Chamber does not maintain pressure or vacuum	Loose pipe connection. Broken pipe or tube	Tighten pipe connection. Replace defective piping.
	Leaking valve	Replace valve stem packing, disc and holder and/or valve seat. Replace entire valve.
	Door fails to close pressure tight.	Replace door gasket.
"Vacuum Breaker" fails to function	Clogged filter cartridge	Replace filter
	Clogged air maze silenser	Remove and clean silenser
Charging manifold (sight glass) does not maintain charge of Cry-Oxcide Gas	Broken sight glass	Replace sight glass
	Defective "O" ring(s)	Replace "O" ring(s)
	Chip or burr on sight glass shield, preventing proper "O" ring seal.	Remove chip or burr from shield
	Leaking top gas valve or leaking gas supply valve	Replace defective valve
Can-O-Gas piercing device fails to puncture can properly or causes loss of gas.	Dull or broken cutting device Defective bushing	Replace can piercing fitting

CHAPTER VII
CONVERSIONS AND COMPONENT REPLACEMENT

1. Cry-Oxcide Can piercing device replacement. Refer to Parts List Illustration Figure 9. To replace complete can piercing fitting assembly remove fitting (1, Fig. 9) and replace with new complete fitting assembly.

2. Gas Charging Manifold Sight Glass Replacement. Refer to Parts List Illustration Figure 9. To replace sight glass (12): Loosen Union Nut (15) completely from Gas Supply Valve. Remove the two screws (18) securing bracket (16) to sterilizer finishing jacket. Complete manifold assembly is free from sterilizer. Remove the three nuts (6) and lockwashers (7) securing the bottom end plate (8) to tie rods (10). Remove bottom end plate (8) complete with elbow (13) male spud (14) and union nut (15). Remove sight glass shield (11). Remove broken sight glass (12) and quad rings (9). Install new quad rings (9) in top and bottom end plates. Install new sight glass (12). Reassemble.

3. Bacteria Retentive Filter Replacement. Refer to Parts List Illustration Figure 7. Remove finishing jacket (25 Fig. 4) from base. Using a benzamatic torch heat straight fitting (3) securing vacuum breaker tube (12) at base of air filter (13). Remove tube (12) from fitting. Remove fitting (3) from base of filter. Holding elbow fitting (26) at top of the filter with a wrench, turn the filter to disengage it from tube elbow fitting. Install replacement filter assembly (13) by connecting to elbow fitting at top. Install straight fitting in base of filter. Insert tube (12) in fitting and make a gas tight solder connection with torch.

4. Pilot Light Replacement. Refer to 22 and 24, Fig. 5. With Finishing Jacket removed from base proceed as follows to replace a burned out pilot light: Disconnect line cord plug from outlet socket. Disconnect pilot light leads from terminal connections. Remove speed-nut from lamp body at rear of panel. Remove complete burned out lamp assembly by pulling it through panel from front side. Replace with new pilot light of same color (red lens - Pt. No. 45155 or white lens - Pt. No. 45156). Fasten pilot light to panel with speed-nut. Connect leads to same two terminals to which burned out lamp leads were connected.

5. Heater Element Replacement. Refer to Figure 6. Disconnect line cord plug from outlet socket. Remove Finishing Jacket from base. Loosen insulation. Disconnect lead wires from defective heater element (7). Loosen two screws securing heater straps just enough to allow heater elements' removal from outside of the chamber wall. Install new heater element and connect lead wires. Reassemble.

6. Thermoswitch Replacement. See Figure 6. Disconnect line cord plug from outlet socket. Remove finishing jacket as directed in Chap. IV, Par. 6. Disconnect wires from terminals on Thermoswitch (19). Loosen set screws on flexible shaft (18) coupling and remove coupling from thermoswitch adjusting shaft. Remove screws securing thermoswitch to sterilizer shell, remove thermoswitch. Install new thermoswitch and connect wires to proper terminals. Reassemble and adjust thermostat control knob as described in Chap. IV, Item 11.

7. Door Gasket Replacement. Refer to Parts List, Figure 5. Remove old gasket (16), scrape gasket groove in door (15) clean. Gasket is cut to a tight fit in groove and must be forced in, a short section at a time, without stretching. Should gasket appear to be too long, do not cut it but start over again, compressing short sections as inserted in groove, to take up full length. Coat face of gasket after installation with Amsco Silicone Spray (Pt. No. 40348), to prevent gasket from sticking to shell end ring under heat. Close door tight to seal gasket firmly.

8. Timer Replacement. Remove Finishing Jacket as directed in Chap. IV, Par. 6. Disconnect wires to timer (1, Fig. 7). Loosen set screw in timer knob (21, Fig. 7), remove knob from timer shaft. Remove nut on shaft housing securing timer to front panel. Remove defective timer. Install new timer, reassemble and connect wires to proper terminals. Refer to Figure 3 - Wiring Diagram.

9. Door Replacement. Refer to Parts List Illustration Figure 5. Remove hinge barlock pin (18) from hinge bearing. Remove barlock (14) with door assembly. Remove thermometer (17) from door (15). Remove "Drive-Lok" pin securing barlock with door post and remove defective door. Install door gasket (16) in replacement door as directed in paragraph 7 this chapter. Reassemble.

10. Valve Replacement. Remove Finishing Jacket as directed in Chap. IV, Par. 6. Remove handwheel from valve stem on 1/4" union angle valves or remove valve stem extension coupling from valve stem on 3/8" union globe valve. Hold the pipe fitting engaging valve with a wrench so piping will not tum or bend. Remove defective valve. Install new valve, using Teflon Tape on threads engaging pipe fitting. Reassemble

11. To convert 10" x 16" Can-O-Gas sterilizers to cylinder operation using 12-88 gas, order Conversion Kit P-54070-091 (Fig. 11) and proceed as follows:

a. Remove sight glass and fittings by removing bracket and loosening union connection.

b. Replace male spud of union with 1/4" female spud (Pt. M-4060-44) and utilize existing nut portion of removed union.

c. Screw needle valve (Pt. P-150420-001) into female spud portion of union.

d. Screw 1/4" pipe coupling (Pt. P-45589-91) onto needle valve.

e. Screw male end of flexible hose (Pt. P-74070-91) into pipe coupling.

f. Screw 1/4" pipe coupling (Pt. 45589-91) on flexible hose and thread cylinder adapter (Pt. A-50351-91) to coupling.

NOTE: Two wrenches are required to make up this assembly.

Assemble pipe threads using Teflon tape as sealant, leaving first entering thread bare.

g. Adjust needle valve so that 10 to 15 minutes are required to charge chamber from 25" Hg vacuum to 7 psig. Needle valve will be between 1/8 and 1/4 turn open for this adjustment.

Chamber pressure should not rise more than 2 psig after charging valve is closed. A greater pressure rise indicates liquid passed into chamber and that needle valve is too far open. The 2 psig rise is due to expansion of gas upon heating.

Recommended charging pressure is 7 psig and exposure time is 4 hours at 130°F.

12. A new hand wheel assembly has been designed to replace the existing one (7 Fig. 5) and a modification has been made to the existing eyebolt (8 Fig. 5) to accept the new hub assembly. The new design incorporates a fail-safe feature into the hub assembly and extends the normal operating life.

Should replacement of the existing hand wheel or eyebolt be necessary or desirable, order a new hand wheel assembly (Pt. A-50890-91).

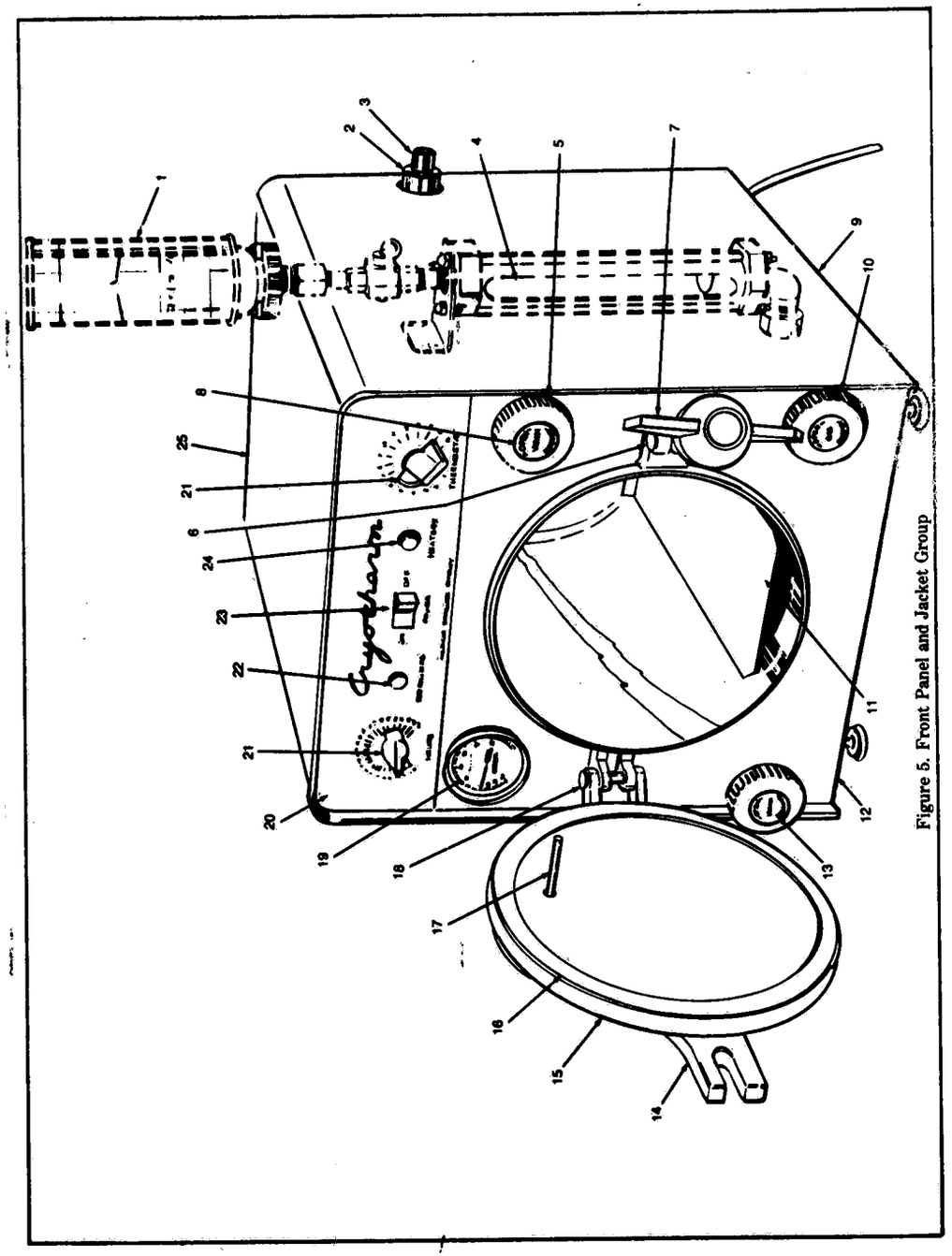


Figure 5. Front Panel and Jacket Group

CHAPTER VIII
PARTS LISTS

Individual components in these lists are keyed to figures in this manual. Thus 5-1 in the Parts List refers to Item 1 in Figure 5.

When ordering parts, specify catalog number, model number and serial number located on sterilizer nameplate secured to Finishing Jacket, rear cover plate.

Fig. & Index No.	Part Number	Description	Units Per Assy.
5-	No. Number	Front Panel and Jacket Group	Ref.
-1	NLA	Cry-Oxcide Gas - 21 oz. can	1
-2	2901-051	Nut, 3/8" Union	1
-3	4201-042	Spud, Female - 3/8" N.P.T.	1
-4	55743-091	Charging Manifold Group (see Figure 9)	1
-5	44330-091	Handwheel, "Vacuum Exhaust"	1
-6	83618-001	Pin, Hinge Eye Bolt	1
-7	93037-002	Handwheel Assembly - Door (see Figure 10)	1
-8	44338-091	Vacuum Exhaust Decal	1
-9	20823-061	Screw, Self Tapping - No. 6 x 1/4" long	9
-10	5600-091	Handwheel, "Gas Supply"	1
-11	45063-091	Shelf, Chamber	1
	47160-091	Two Tray Rack Assembly (Not Shown)	A/R
-12	53342-010	Front Panel Assembly	1
-13	24295-091	Handwheel, "Vacuum Breaker"	1
-14	465992-001	Barlock, Hinge	1
-15	45078-034	Door Assembly	1
-16	45047-091	Gasket, Door	1
-17	45842-091	Thermometer	1
-18	40847-062	Pin, Hinge Barlock	1
-19	1940-051	Gauge, Compound Pressure	1
-20	59214-031	Plate, Name (electrical control functions)	1
-21	14378-091	Knob, Pointer	2
-22	45156-091	Pilot Light, White Lens	1
-23	43997-091	Switch, Power	1
-24	45155-091	Pilot Light, Red Lens	1
-25	45089-010	Finishing Jacket Assembly	1

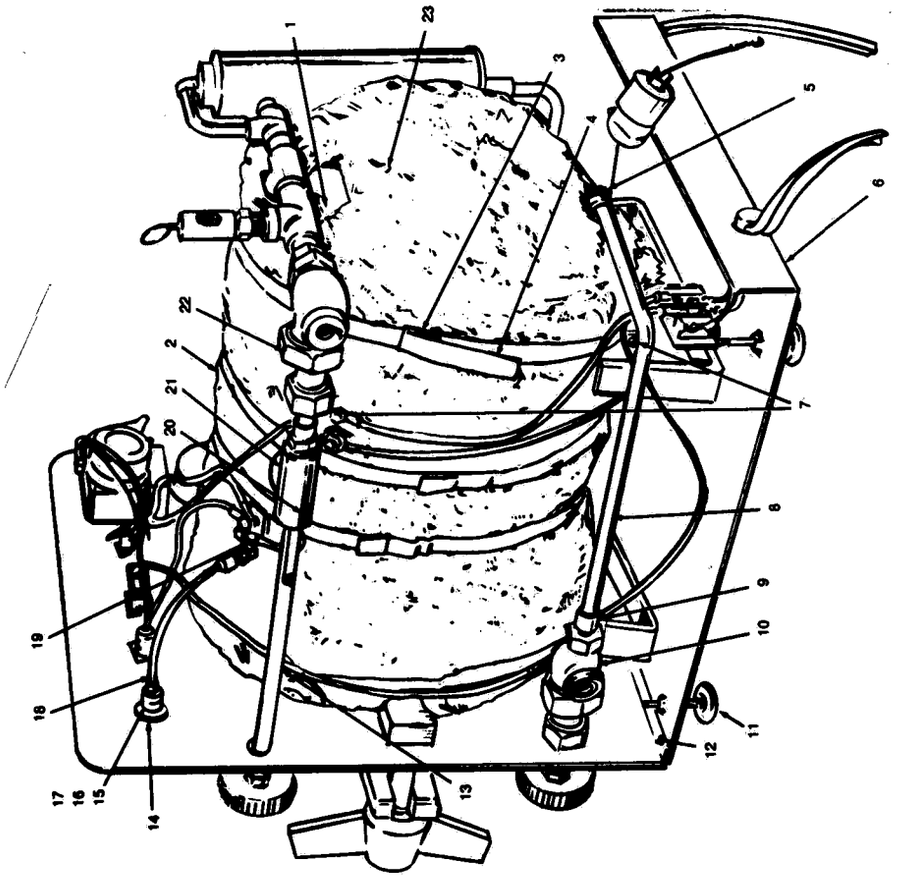


Figure 6. Base and Shell Group (right side)

Fig. & Index No.	Part Number	Description	Units Per Assy.
6 -	No Number	Base and Shell Group (right side)	Ref.
-1	134150-002	Shell and Door Assembly	1
- 1	NLA	Shell Assembly	1
- 2	48055-091	Insulation, Shell	1
- 3	32268-091	Seal, Insulation Strap	4
- 4	NLA	Strap, Insulation	4
- 5	45285-091	Elbow, Copperflow - 3/8" ODT x 1/4" N.P.T.	1
- 6	45081-091	Base Assembly	1
- 7	45085-091	Heater Element - 250 Watts, 120 Volts	2
- 8	NLA	Tube, Gas Inlet - 3/8" ODT	1
- 9	NLA	Adapter, Copperflow - 3/8" ODT x 1/4" N.P.T.	1
-10	5653-091	Valve, Union Angle - 1/4" N.P.T.	1
-11	45088-045	Foot, Adjustable	4
-12	3967-041	Screw, Rd. Hd. - No. 8-32 x 1/4" long	4
-13	45495-043	Rod, Valve Extension	1
-14	42639-091	Ring, Retaining	1
-15	45065-041	Bushing, Thermostat Shaft	1
-16	45064-061	Shaft, Thermostat	1
-17	31689-045	Ring, Tru-Arc - Thermostat Shaft	1
-18	45310-091	Flexible Shaft Assembly	1
-19	14917-091	Thermoswitch	1
-20	46038-061	Pin, Cotter	2
-21	45524-045	Coupling - Valve Extension Rod	1
-22	5657-051	Valve, Union Globe - 3/8" N.P.T.	1
-23	48056-091	Insulation, Backhead	1

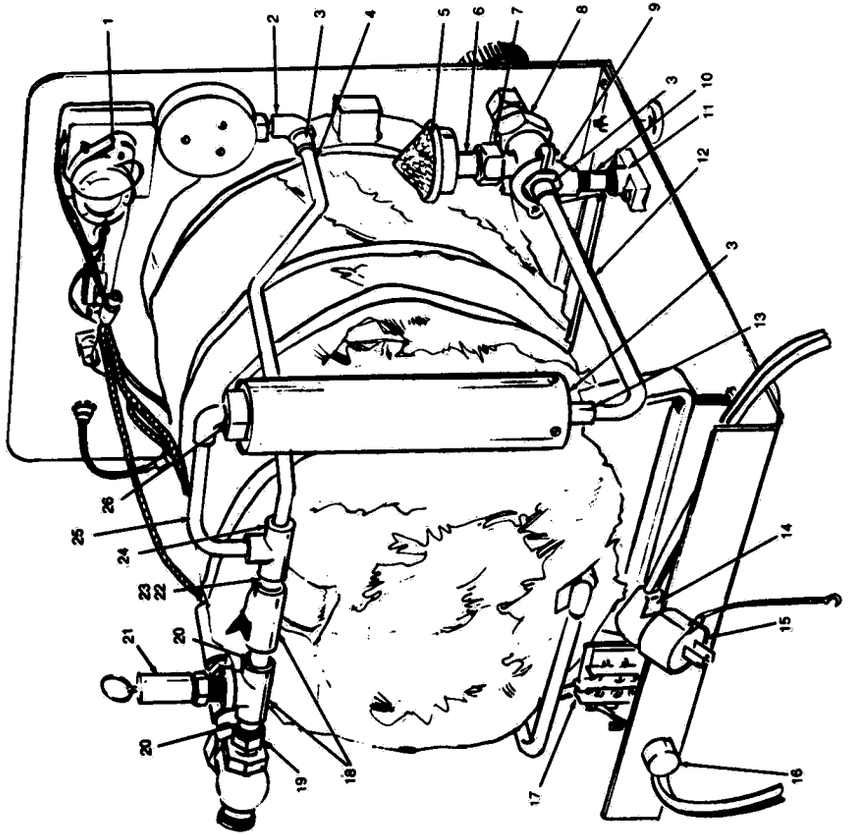


Figure 7. Base and Shell Group (rear and left side)

Fig. & Index No.	Part Number	Description	Units Per Assy.
7 -	No number	Base and Shell Group (rear and left side)	Ref.
- 1	37608-091	Timer, 24 Hour	1
- 2	1616-091	Elbow, Reducing - 1/4" N.P.T. x 1/8" N.P.T.	1
- 3	NLA	Adapter, Copperflow - 3/8" ODT x 1/4" N.P.T.	3
- 4	NLA	Tube, Gauge - 3/8" ODT	1
- 5	41285-091	Silenser, Air Maze - 1/4" N.P.T.	1
- 6	4060-091	Spud, Female - 1/4" N.P.T.	1
- 7	2900-051	Nut - 1/4" Union.	1
- 8	5653-091	Valve, Union Angle - 1/4" N.P.T.	1
- 9	39590-010	Ring, Split - Pipe Support	1
-10	28920-091	Nipple, Pipe Support - 1/4" NPS x 1 3/4" long.	1
-11	9613-091	Support, Pipe	1
-12	NLA	Tube, Vacuum Breaker - 3/8" ODT	1
-13	41319-091	Air Filter Assembly (Bacteria Retentive)	1
-14	40297-091	Line Cord Assembly	1
-15	NLA	Adapter, Grounding	1
-16	43137-091	Bushing, Line Cord Strain Relief	1
-17	45087-091	Terminal Strip - Barrier Type	1
-18	45282-091	Tee, Copperflow - 5/8" ODT x 5/8" ODT x 3/8" NPT	2
-19	45284-091	Adapter, Copperflow - 5/8" ODT x 3/8" N.P.T.	1
-20	NLA	Tube, Copper - 5/8" ODT	2
-21	150498-001	Valve, Safety - Set 33 PSI - 3/8" NPT.	1
-22	NLA	Tube, Copper - 1/2" ODT x 1 3/8" long	1
-23	45287-091	Flush Bushing, Copperflow - 5/8" ODT x 1/2" ODT	1
-24	NLA	Tee, Copperflow - 1/2" ODT x 3/8" ODT x 3/7" ODT	1
-25	NLA	Tube, Air Filter - 3/8" ODT	1
-26	45285-091	Elbow, Copperflow - 3/8" ODT x 1/4" N.P.T.	1

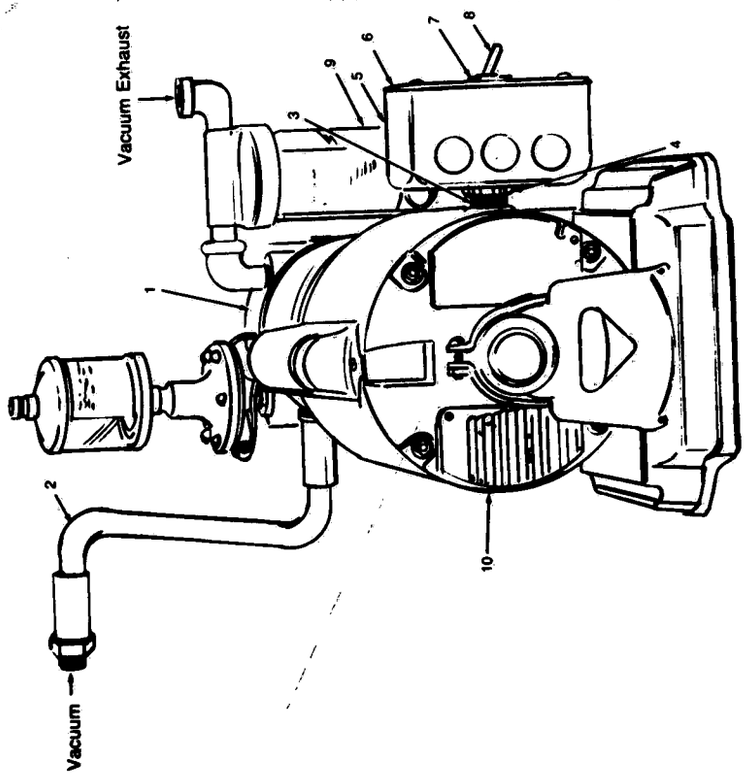


Figure 8. Can-O-Gas Sterilizer With Vacuum Pump Group.

Fig. & Index No.	Part Number	Description	Units Per Assy.
8	55730-091	Vacuum Pump Assembly	1
-1	431185-091	Vacuum Pump, Complete with Motor	1
-2	45312-091	Hose Assembly, 3/8" NPT Connectors	1
-3	32657-091	Conduit Connection	1
-4	8681-091	Nut, Lock - for 1/2" Conduit	4
-5	23780-091	Box, Conduit	1
-6	44328-091	Cover, Conduit Box	1
-7	38674-048	Plate, Indicator - "ON-OFF"	1
-8	37115-091	Switch, Toggle - D.P.S.T	1
-9	48663-091	Jar, Glass, Filter for Vacuum Pump #33786-91	1
-10	49391-091	Motor, 60 Hz	1
	78663-091	Oil, One Quart #AD220 (Not Shown)	1
		Wire, 6" Long Black (Not Shown)	1
		Wire, 6" Long Red (Not Shown)	1
	14591-091	Terminal, Wire (Not Shown)	4

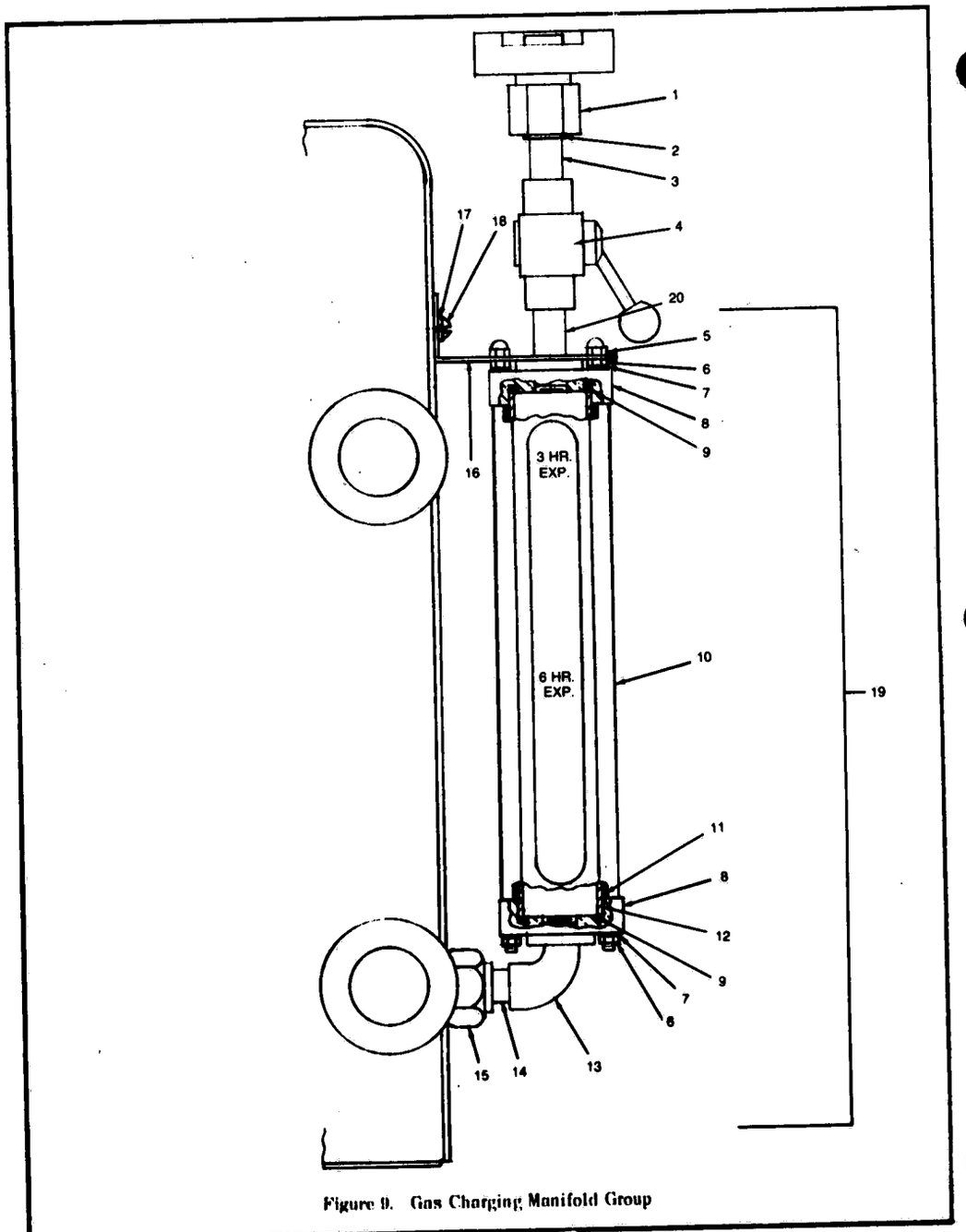


Figure 9. Gas Charging Manifold Group

Fig. & Index No.	Part Number	Description	Units Per Assy.
9 -	55743-091	Gas Charging Manifold Group	Ref.
- 1	40017-051	Fitting, Can-O-Gas Piercing, Assembly	1
- 2	849-042	Bushing - 3/8" NPT x 1/4" NPT	1
- 3	29015-051	Nipple, 1/4" NPS x 1 1/2" long	2
- 4	41072-051	Valve, Plug - 3/8" NPT	1
	849-042	Bushings, Reducing - 3/8" x 1/4" Flush Type	2
- 5	8695-048	Nut, Acorn - No. 10 - 32	3
- 6	2959-041	Nut, Hex - No. 10 - 32	6
- 7	19685-061	Lockwasher - No. 10	6
- 8	41364-051	Plate, End	2
- 9	41302-091	Ring, Quad	2
-10	45068-051	Rod, Tie	3
-11	45887-051	Shield, Sight Glass	1
-12	45067-091	Sight Glass	1
-13	1619-051	Elbow, Street - 1/4" N.P.T.	1
-14	4048-044	Spud, Male - 1/4" N.P.T.	1
-15	2900-051	Nut - 1/4" Union	1
-16	53339-010	Bracket	1
-17	19678-045	Lockwasher - 1/4"	2
-18	3997-041	Screw, Rd. Hd. - 1/4 - 20 x 3/8" long	2
-19	NLA	Sight Glass Assembly (Includes items 5, 6, 7, 8, 9, 10, 11, 12 & 16)	1
-20	29016-051	Nipple	1

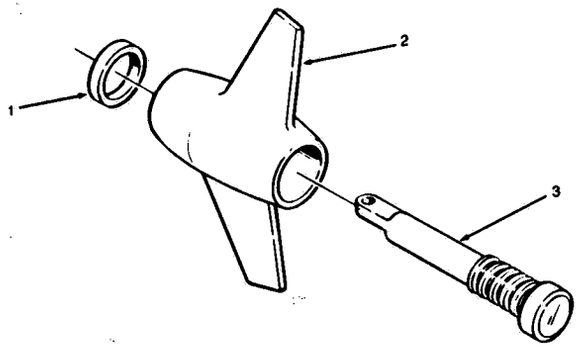


Figure 10. Hand Wheel Assembly

Fig. & Index No.	Part Number	Description	Units Per Assy.
10-	93037-002	Handwheel Assembly	Ref.
-1	83433-002	Washer	1
-2	136255-001	Handwheel	1
-3	93029-001	Bolt, Eye	1

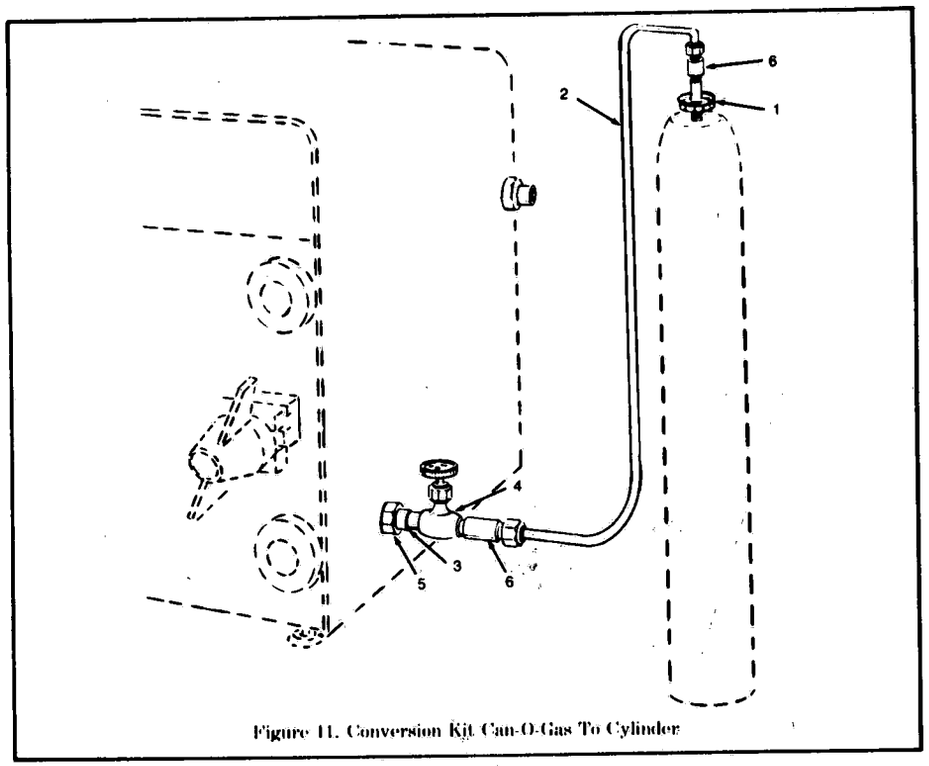


Figure 11. Conversion Kit Can-O-Gas To Cylinder

Fig. & Index No.	Part Number	Description	Units Per Assy.
11-	54070-091	Conversion Kit Can-O-Gas To Cylinder	1
-1	50438-045	Inlet,	1
-2	74070-091	Hose Assembly	1
-3	4060-044	Spud, Female (1/4)	1
-4	150420-001	Valve, Needle (1/4)	1
-5	2900-051	Nut	1
-6	45589-091	Coupling, Brass Pipe (1/4)	2

	Part Number	Replacement Parts List Parts Not Shown On Preceding Parts Groups Description	Units Per Assy.
	25347-091	Disc and Holder - For 1/4" and 3/8" Valves	1
	8784-091	Valve Stem Packing - For 1/4" and 3/8" Valves.	2
	4585-061	Valve Seat (Monel) - For 1/4" Angle Valve	1
	5685-061	Valve Seat (Monel) - For 3/8" Globe Valve	1
	30341-061	Pin, "Drive-Lok" - For Securing Door Post With Barlock	1
	45046-061	Strap, Heater Elements.	2
	45082-010	Rear Cover Plate Assembly	1
	45066-091	Sticker, Wiring Diagram	1

AMSCO SERVICE

CAN-O-GAS STERILIZER 10"x16"
PORTABLE
P-75I466-002

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