AMSCO Maintenance Manual

MEDALLION SERIES
CRYOTHERM® STERILIZER

(6/84) P-754215-091

AMSCO | AMERICAN STERILIZER COMPANY • 9459 WEST 93rd STREET • AMSCO 4078 • ERIE • PENNSYLVANIA 16514
Printed in U.S.A.

MEDALLION SERIES
CRYOTHERM® STERILIZER

(6/84) P-754215-091

Printed in U.S.A

TABLE OF CONTENTS

NOTE: For ETO hazards read "Recommendations for Effective Use and Installation of Ethylene Oxide Sterilizers & Aerators" (DB-3002) obtainable from your local AMSCO representative.

LIST OF ILLUSTRATIONS

SECTION 1
GENERAL INFORMATION

The Medallion Series Cryotherm® sterilizers are single wall (non-jacketed) types. Two sizes are available: 16" x 16" x 26" and 20" x 20" x 38". All shells are fabricated in compliance with the A.S.M.E. code for unfired pressure vessels and, if required, are stamped in certification thereof.

Double door models are available in the 20" x 20" x 38" size only.

All Cryotherm sterilizers are equipped with automatic control systems. Although they are automatic, control systems can be manually operated at the option of the attendant.

All Cryotherms are available in either recessed or free standing cabinet models. Cabinets may be either painted or stainless steel. Chamber door opening may be either right or left hand. All chamber doors are equipped with safety locks which prevent the accidental opening of a pressurized chamber.

Figure 1-1 shows a typical Cryotherm sterilizer.

Table 1-1 shows typical data for all Cryotherm sterilizers. Precise information on dimensions and location of service connections can be obtained either by referring to the rough plans furnished with sterilizers or by requesting the information directly from the American Sterilizer Co., Erie, Pa.

When corresponding with the factory about a particular sterilizer, always refer to the model, unit and serial numbers found on the identification plate.

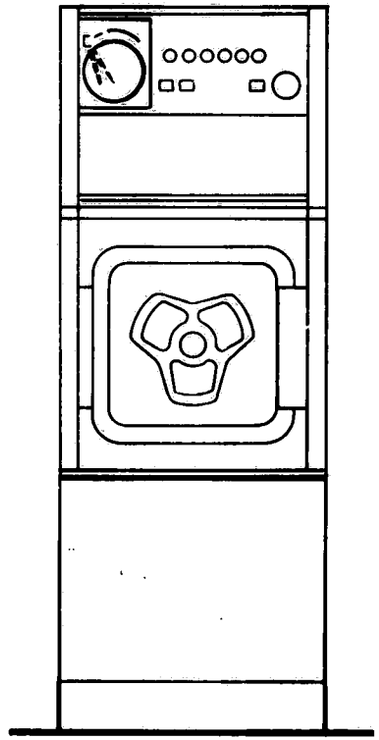


Figure 1-1. TYPICAL STERILIZER.

TABLE 1-1. CRYOTHERM® DATA

STERILIZER SIZE (INCHES)	16 x 16 x 26	20 x 20 x 38
DIMENSIONS (CABINET MODELS) Overall Length (Door Closed) Overall Width Overall Height	 37-1/2" 26" 75"	 49-1/2" 30" 75"
DIMENSIONS (RECESSED OPENING) Width Height (NOTE: Maximum vertical plumb variation of wall opening is 3/4")	 24" 74-1/4"	 28" 74-1/4"
WEIGHT (APPROXIMATE)	700 lbs.	750 lbs.
SHIPPING WEIGHT (APPROXIMATE)	850 lbs.	900 lbs.
SHELL AND CHAMBER CONSTRUCTION Type Material Chamber Pressure Rating	 Single Wall - Non-Jacketed Nickel Clad Steel 36 PSIG	 40 PSIG
ELECTRICAL REQUIREMENTS Controls Vacuum Pump and Shell Heaters	 110/120 Volts, 60 Cycle, Single Phase, 5 Amp 208/240 Volts, 3 Phase, 30 Amps	
STEAM REQUIREMENTS Supply Pressure	 50 to 80 PSIG when Operating	
COLD WATER REQUIREMENTS Supply Pressure Supply Temperature	 20 to 50 PSIG when Operating 45°F. to 85°F.	
VENT SYSTEMS	Atmospheric or Condensing	
CONTROL SYSTEMS	Automatic Only	
STERILIZING AGENT	12% Ethylene Oxide 88% Refrigerant 12 (By Weight)	

SECTION 2
CONSTRUCTION DETAILS

2-1. STAND AND CABINET

The stand which supports the chamber, piping, controls and panels is fabricated of standard structural steel shapes. All joints are welded; the finished stand is painted with a durable grey enamel. There is a leveling screw at each leg. A sub-frame, bolted to the stand, supports the front panels and controls. Side and top panels are standard on cabinet models. Recessed models have a front panel only.

Panels on cabinet models may be removed to expose piping and mechanisms. The side panels butt against a gasket on the front panel, latch over the top support and are held at the bottom by a bayonet catch. The top panel attaches to the cabinet frame by speednut fasteners. On all Cryotherm® sterilizers the top is of one piece construction and is louvered for ventilation.

Side panels are fabricated of sound-deadened stainless or painted steel.

Figure 1-1 shows the front panel of a typical Cryotherm® sterilizer. At the top are the control panels; the center section is taken up by the chamber door and vents; below is a door which provides access to the gas cylinder, vacuum pump, vacuum-pressure controls, gas filter and piping. Operating instructions, recording charts and spare parts are stored in a compartment on the inside of the door. Across the bottom of the sterilizer is a trim skirt of painted steel. On recessed models this skirt is adjustable and may be fitted to the floor. On cabinet models the front trim skirt is non-adjustable. Cabinet models have similar non-adjustable trim skirts along the sides.

2-2. DOORS

Doors are of cast bronze. All doors are covered radial-arm type with a special locking device to prevent accidental opening. All are manually operated. Handwheels are cast aluminum, finished in a non-staining white porcelain enamel. Hinges are fabricated of stainless steel. Door gaskets are of a square section solid material conforming to A.S.M.E. specifications.

The chamber door must be closed and locked before the "START" button becomes operative. Once the door is sealed and the "START" button has been pressed, the sterilizer will automatically run through the selected sterilization cycle. When the cycle is completed, a buzzer sounds. When the "STOP" button is pressed, the buzzer stops and the system reverts to "READY". If the door is not opened at once, the buzzer will continue to sound for two minutes and then shut off. The system, however, will not revert to "READY" until the door is unlocked.

2-3. CONTROLS

There are three groups of controls on Cryotherm sterilizers: two on the control panels above the chamber door, and one behind the access door below the chamber.

The upper control panel is in two sections. At the top is an uncovered panel on which is displayed the "START, "STOP" and "OVER TEMP RESET" buttons, phase indicator lights, timer and vacuum-pressure temperature indicating and recording device. The lower section of the upper control panel is concealed behind a white painted drop door. On this section of the panel are found the Power Switch, Automatic-Manual Switch, fuse, phase indicator and operating instruction plate.

The control group behind the access door includes the manually controlled gas cylinder valve, gas supply and steam supply valves and the motor starter reset button.

Figure 2-1 shows all controls in their approximate locations.

2-4. VENT SYSTEMS

Two basic types of venting systems are available: Atmospheric and Condensing. In the atmospheric system the exhaust gas is vented to outside air through pipes or stacks. In the condenser exhaust system the gas is absorbed in water which is drained away into a waste system. The condensing system is usually employed where atmospheric venting would require vent piping too long or too costly to be practical and where local codes permit.

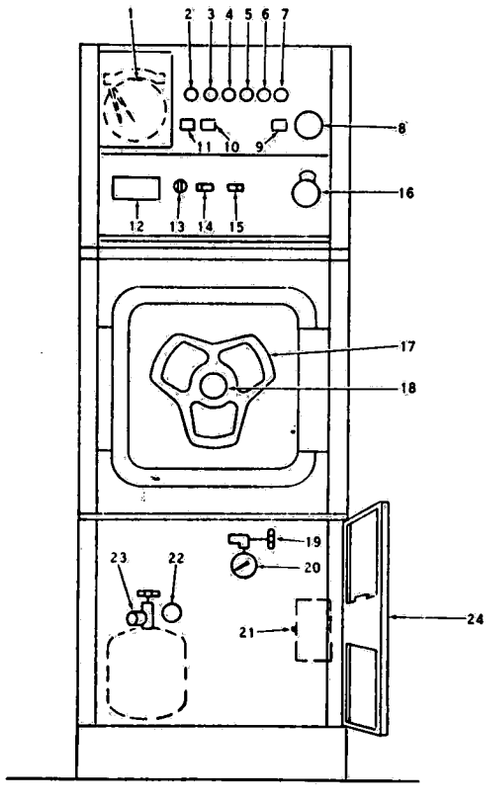
NOTE: For Envirogard™ considerations see page 7-71.

2-5. AUXILIARY EQUIPMENT

Loading equipment, in the form of universal racks and trays, is available for all sterilizers. For the 20" x 20" x 38" models, a loading car and transfer carriage may be obtained as an option. All loading equipment, except the transfer carriage, is of monel construction.

2-6. COMPOSITE DRAWINGS

The following composite drawings show clearance installation dimensions, service information and details for various models.



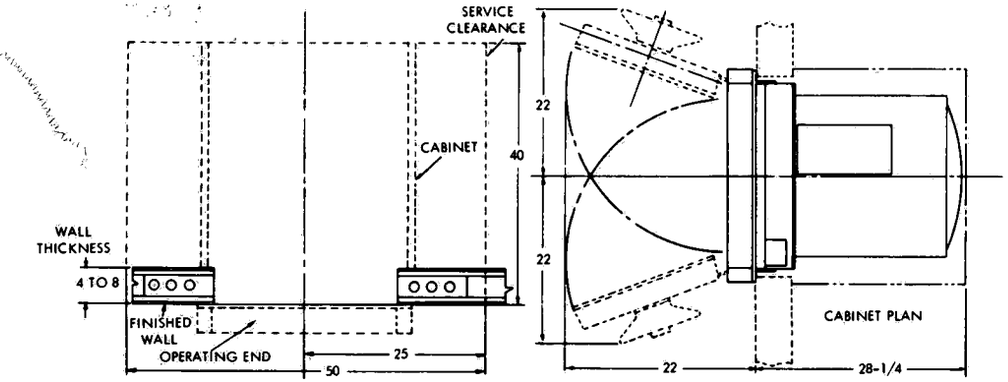
1. Recorder
2. "Ready" Light
3. "Vacuum" Light
4. "Charge" Light
5. "Sterilize" Light
6. "Air" Light
7. "Sterile" Light
8. Exposure Timer
9. Over-Temperature Reset Button
10. Stop Button
11. Start Button
12. Instruction Plate
13. Fuse
14. Power Switch
15. Automatic - Manual Switch
16. Manual Control Knob and Phase Indicator
17. Handwheel
18. Handwheel Button
19. Gas Supply Valve
20. Pressure Gauge
21. Motor Starter Reset Button
22. Steam Supply Valve
23. Gas Cylinder Valve
24. Access Door

Figure 2-1. LOCATION OF ALL CONTROLS.

THIS PAGE
INTENTIONALLY LEFT
BLANK

CHAMBER SIZE	STEAM CONSUMPTION POUNDS/HOUR MAX	STERILIZER HEAT LOSSES BTU/HOUR			LOSSES FROM LOAD ON REMOVAL BTU'S	WATER CONSUMPTION IN G.P.M.	STERILIZER WEIGHT IN POUNDS			
			RECESSED				CABINET MODEL		RECESSED MODEL	
		CABINET	FRONT	BACK			UNCRATED	CRATED	UNCRATED	CRATED
16X16X26	6 (CONDITIONING)	250	100	150	550	.6 FOR VACUUM PUMP	750	900	700	850

	INPUT TERMINALS	SIZE	PRESSURE
A	COLD WATER	3/8 NPT	20-50 PSIG
C	STEAM RETURN	3/8 NPT	
D	STEAM SUPPLY	3/8 NPT	50-80 PSIG
E	ATMOSPHERIC EXHAUST	1/2 NPT	
F	DRAIN	1-1/2 ODT	
J	TUBING FROM PUMP TO FLOOR DRAIN	5/8 OD	
W	110/120 V. 60 CYCLE 5 AMP		
	208/240 V. 60 CYCLE 30 AMP 3 PHASE		



NOTES:

PIPING:
STEAM AND WATER INPUT TERMINALS TO THE STERILIZER ARE AS SHOWN. PIPING FROM THE FLOOR AND/OR WALL SUPPLY TERMINALS TO THE STERILIZER MUST BE FURNISHED BY OTHERS

PIPE SIZES:
PIPE SIZES LISTED IN TABLE SHALL BE AT INLET TERMINALS ONLY. TO INSURE ADEQUATE SERVICE, IT IS RECOMMENDED THAT SUPPLY LINES TO THE WALL AND/OR FLOOR OUTLET TERMINALS BE AT LEAST ONE SIZE LARGER THAN INPUT TERMINALS. PRESSURES NOTED FOR INPUT SUPPLY MUST BE MAINTAINED AT MAXIMUM SPECIFIED FLOW.

SHUTOFF VALVES:
TO FACILITATE INITIAL INSTALLATION OF THE STERILIZER, AND SERVICING AFTER INSTALLATION, IT IS RECOMMENDED THAT SHUTOFF VALVES BE INSTALLED ON STEAM AND WATER LINES BETWEEN THE FLOOR AND/OR WALL OUTPUT TERMINALS AND THE STERILIZER INPUT TERMINALS.

STEAM RETURN LINES:
RETURN LINES FROM STERILIZERS SUPPLIED FROM AN EXTERNAL STEAM SOURCE MUST BE CONNECTED TO A VENTED RECEIVER SO AS TO AVOID ANY BUILD UP OF BACK PRESSURE

ATMOSPHERIC EXHAUST:
EACH STERILIZER EXHAUST SHOULD BE CONNECTED TO A VERTICAL, UNRESTRICTED ATMOSPHERIC VENT STACK. AT NO TIME SHALL ANY RISER FROM THE STERILIZER (REAR OF CABINET) TO THE HEADER OR VENT STACK BE LESS THAN 45° TO THE HORIZONTAL, AND ALL PIPING SHALL DRAIN TOWARD THE STERILIZER OR STERILIZERS

ROUGH-IN:
ALL LINES MUST BE SHORT STUBBED THROUGH FLOOR AND/OR WALL FAR ENOUGH TO ALLOW FOR PIPE COUPLING.

GENERAL:
THIS EQUIPMENT MAY BE EITHER CABINET OR RECESS MOUNTED. IT IS IMPORTANT THAT IN EITHER CASE SUFFICIENT AREA IS PROVIDED TO FACILITATE CLEANING AND MAINTENANCE OPERATIONS. THE SERVICE AREAS INDICATED ARE CONSIDERED ADEQUATE UNDER NORMAL CONDITIONS.

CABINET MODEL:
FREE STANDING CABINET UNIT SHOULD BE LOCATED IN A WELL VENTILATED ROOM WHEREBY VAPORS MAY BE DISPELLED RAPIDLY WHEN A LOAD IS BEING REMOVED FROM THE STERILIZER.

RECESSED INSTALLATION:
IT IS RECOMMENDED THAT A SLIGHT NEGATIVE PRESSURE BE MAINTAINED IN THE AREA OF THE RECESSED PORTION OF THE STERILIZER. GRILLED OPENINGS THROUGH THE WALL INTO THE RECESS AREA SHOULD BE PROVIDED DIRECTLY ABOVE STERILIZER. THROUGH THESE, THE VAPORS WHICH RISE FROM THE OPEN STERILIZER AND LOAD MAY BE DRAWN OFF.

ILLUMINATION:
SUFFICIENT ILLUMINATION SHOULD BE PROVIDED FROM CEILING MOUNTED FIXTURES TO COVER ALL SERVICE AREAS.

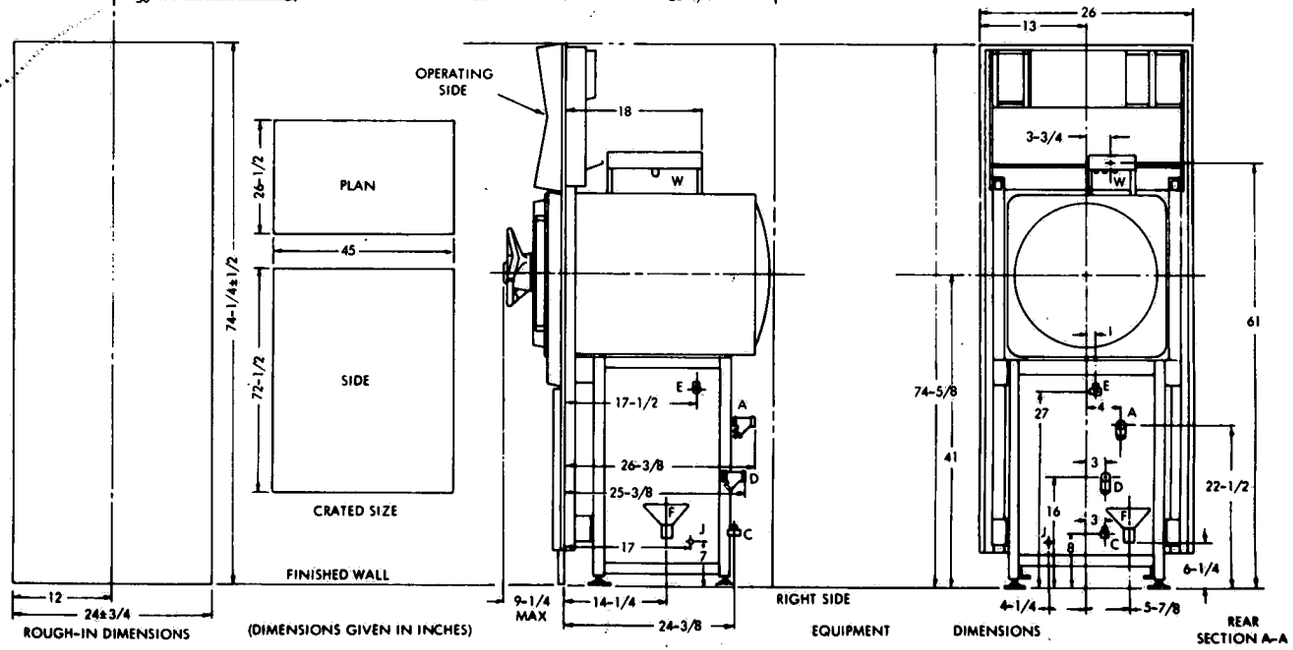
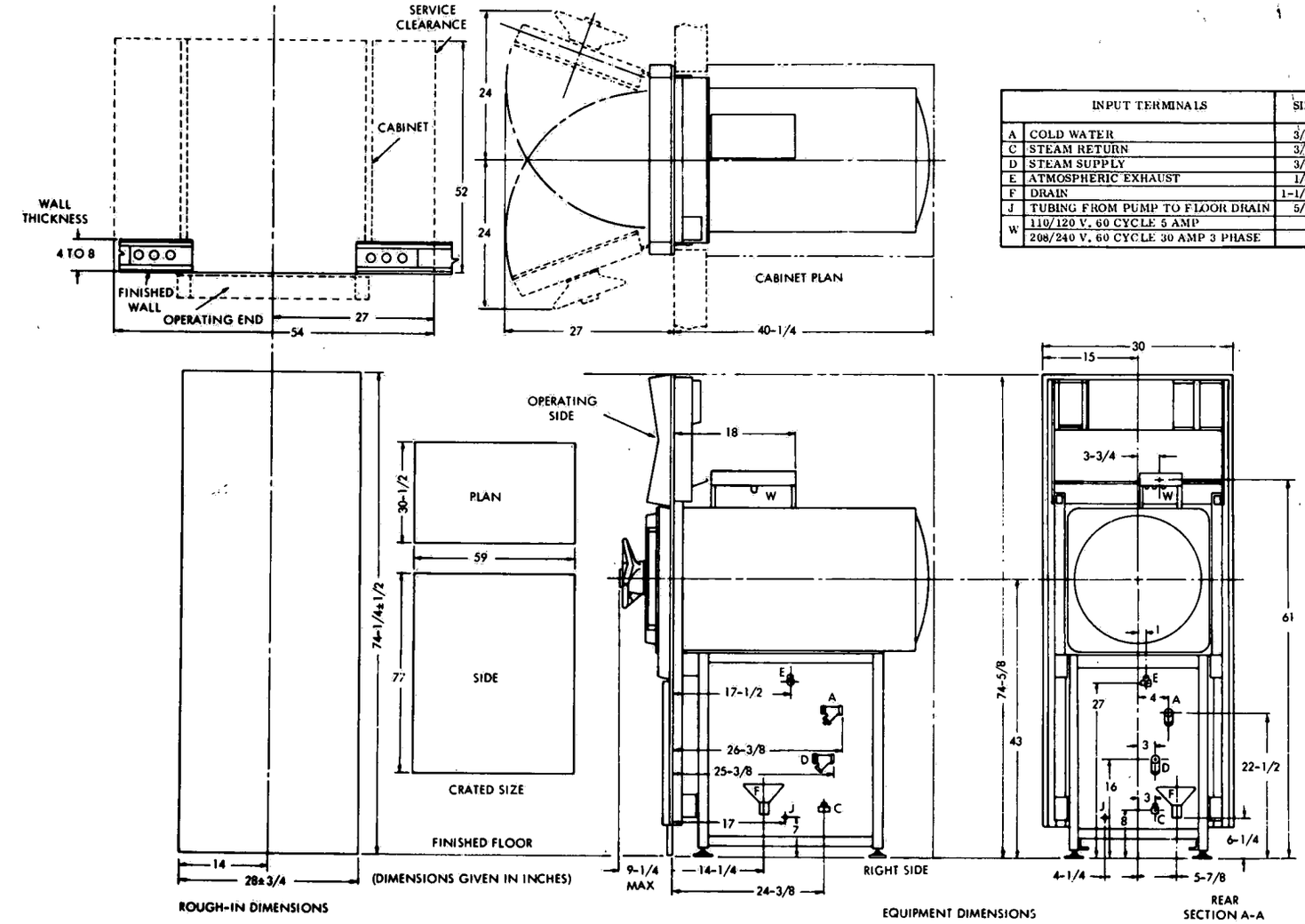


Figure 2-2. COMPOSITE DRAWING: 16" x 16" Single Door Sterilizer.

2-3/2-4



	INPUT TERMINALS	SIZE	PRESSURE
A	COLD WATER	3/8 NPT	20-50 PSIG
C	STEAM RETURN	3/8 NPT	
D	STEAM SUPPLY	3/8 NPT	50-80 PSIG
E	ATMOSPHERIC EXHAUST	1/2 NPT	
F	DRAIN	1-1/2 ODT	
J	TUBING FROM PUMP TO FLOOR DRAIN	5/8 OD	
W	110/120 V. 60 CYCLE 5 AMP		
	208/240 V. 60 CYCLE 30 AMP 3 PHASE		

NOTES:

PIPING:
STEAM AND WATER INPUT TERMINALS TO THE STERILIZER ARE AS SHOWN. PIPING FROM THE FLOOR AND/OR WALL SUPPLY TERMINALS TO THE STERILIZER MUST BE FURNISHED BY OTHERS

PIPE SIZES:
PIPE SIZES LISTED IN TABLE SHALL BE AT INLET TERMINALS ONLY. TO INSURE ADEQUATE SERVICE, IT IS RECOMMENDED THAT SUPPLY LINES TO THE WALL AND/OR FLOOR OUTLET TERMINALS BE AT LEAST ONE SIZE LARGER THAN INPUT TERMINALS. PRESSURES NOTED FOR INPUT SUPPLY MUST BE MAINTAINED AT MAXIMUM SPECIFIED FLOW.

SHUTOFF VALVES:
TO FACILITATE INITIAL INSTALLATION OF THE STERILIZER, AND SERVICING AFTER INSTALLATION, IT IS RECOMMENDED THAT SHUTOFF VALVES BE INSTALLED ON STEAM AND WATER LINES BETWEEN THE FLOOR AND/OR WALL OUTPUT TERMINALS AND THE STERILIZER INPUT TERMINALS.

STEAM RETURN LINES:
RETURN LINES FROM STERILIZERS SUPPLIED FROM AN EXTERNAL STEAM SOURCE MUST BE CONNECTED TO A VENTED RECEIVER SO AS TO AVOID ANY BUILD UP OF BACK PRESSURE

ATMOSPHERIC EXHAUST:
EACH STERILIZER EXHAUST SHOULD BE CONNECTED TO A VERTICAL, UNRESTRICTED ATMOSPHERIC VENT STACK. AT NO TIME SHALL ANY RISER FROM THE STERILIZER (REAR OF CABINET) TO THE HEADER OR VENT STACK BE LESS THAN 45° TO THE HORIZONTAL, AND ALL PIPING SHALL DRAIN TOWARD THE STERILIZER OR STERILIZERS

ROUGH-IN:
ALL LINES MUST BE SHORT STUBBED THROUGH FLOOR AND/OR WALL FAR ENOUGH TO ALLOW FOR PIPE COUPLING.

GENERAL:
THIS EQUIPMENT MAY BE EITHER CABINET OR RECESS MOUNTED. IT IS IMPORTANT THAT IN EITHER CASE SUFFICIENT AREA IS PROVIDED TO FACILITATE CLEANING AND MAINTENANCE OPERATIONS. THE SERVICE AREAS INDICATED ARE CONSIDERED ADEQUATE UNDER NORMAL CONDITIONS.

CABINET MODEL:
FREE STANDING CABINET UNIT SHOULD BE LOCATED IN A WELL VENTILATED ROOM WHEREBY VAPORS MAY BE DISPELLED RAPIDLY WHEN A LOAD IS BEING REMOVED FROM THE STERILIZER.

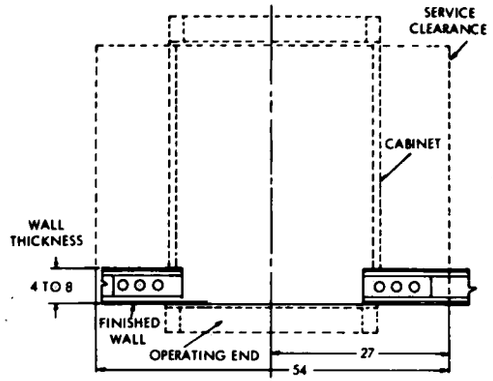
RECESSED INSTALLATION:
IT IS RECOMMENDED THAT A SLIGHT NEGATIVE PRESSURE BE MAINTAINED IN THE AREA OF THE RECESSED PORTION OF THE STERILIZER. GRILLED OPENINGS THROUGH THE WALL INTO THE RECESS AREA SHOULD BE PROVIDED DIRECTLY ABOVE STERILIZER. THROUGH THESE, THE VAPORS WHICH RISE FROM THE OPEN STERILIZER AND LOAD MAY BE DRAWN OFF.

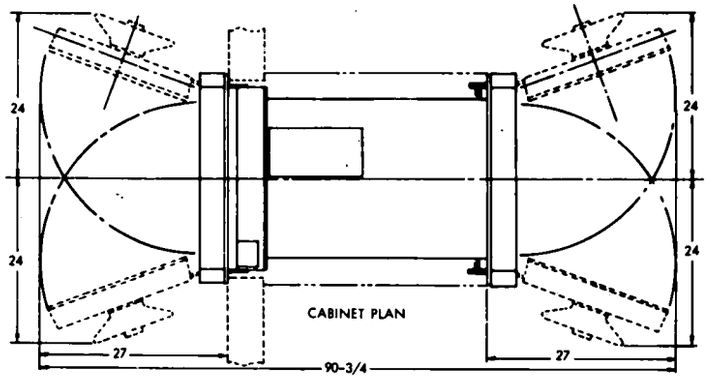
ILLUMINATION:
SUFFICIENT ILLUMINATION SHOULD BE PROVIDED FROM CEILING MOUNTED FIXTURES TO COVER ALL SERVICE AREAS.

CHAMBER SIZED	STEAM CONSUMPTION POUNDS/HOUR MAX	STERILIZER HEAT LOSSES BTU/HOUR			LOSSES FROM LOAD ON REMOVAL BTU'S	WATER CONSUMPTION IN G.P.M.	STERILIZER WEIGHT IN POUNDS			
			RECESSED				CABINET MODEL		RECESSED MODEL	
		CABINET	FRONT	BACK			UNCRATED	CRATED	UNCRATED	CRATED
20X20X38	6 (CONDITIONING)	300	150	200	600	.6 FOR VACUUM PUMP	800	950	750	900

Figure 2-3. COMPOSITE DRAWING: 20" x 20" Single Door Sterilizer.

	INPUT TERMINALS	SIZE	PRESSURE
A	COLD WATER	3/8 NPT	20-50 PSIG
C	STEAM RETURN	3/8 NPT	
D	STEAM SUPPLY	3/8 NPT	50-80 PSIG
E	ATMOSPHERIC EXHAUST	1/2 NPT	
F	DRAIN	1-1/2 ODT	
J	TUBING FROM PUMP TO FLOOR DRAIN	5/8 OD	
W	110/120 V. 60 CYCLE 5 AMP 208/240 V. 60 CYCLE 30 AMP 3 PHASE		





NOTES:

PIPING:
STEAM AND WATER INPUT TERMINALS TO THE STERILIZER ARE AS SHOWN. PIPING FROM THE FLOOR AND/OR WALL SUPPLY TERMINALS TO THE STERILIZER MUST BE FURNISHED BY OTHERS

PIPE SIZES:
PIPE SIZES LISTED IN TABLE SHALL BE AT INLET TERMINALS ONLY. TO INSURE ADEQUATE SERVICE, IT IS RECOMMENDED THAT SUPPLY LINES TO THE WALL AND/OR FLOOR OUTLET TERMINALS BE AT LEAST ONE SIZE LARGER THAN INPUT TERMINALS. PRESSURES NOTED FOR INPUT SUPPLY MUST BE MAINTAINED AT MAXIMUM SPECIFIED FLOW.

SHUTOFF VALVES:
TO FACILITATE INITIAL INSTALLATION OF THE STERILIZER, AND SERVICING AFTER INSTALLATION, IT IS RECOMMENDED THAT SHUTOFF VALVES BE INSTALLED ON STEAM AND WATER LINES BETWEEN THE FLOOR AND/OR WALL OUTPUT TERMINALS AND THE STERILIZER INPUT TERMINALS.

STEAM RETURN LINES:
RETURN LINES FROM STERILIZERS SUPPLIED FROM AN EXTERNAL STEAM SOURCE MUST BE CONNECTED TO A VENTED RECEIVER SO AS TO AVOID ANY BUILD UP OF BACK PRESSURE

ATMOSPHERIC EXHAUST:
EACH STERILIZER EXHAUST SHOULD BE CONNECTED TO A VERTICAL, UNRESTRICTED ATMOSPHERIC VENT STACK. AT NO TIME SHALL ANY RISER FROM THE STERILIZER (REAR OF CABINET) TO THE HEADER OR VENT STACK BE LESS THAN 45° TO THE HORIZONTAL, AND ALL PIPING SHALL DRAIN TOWARD THE STERILIZER OR STERILIZERS

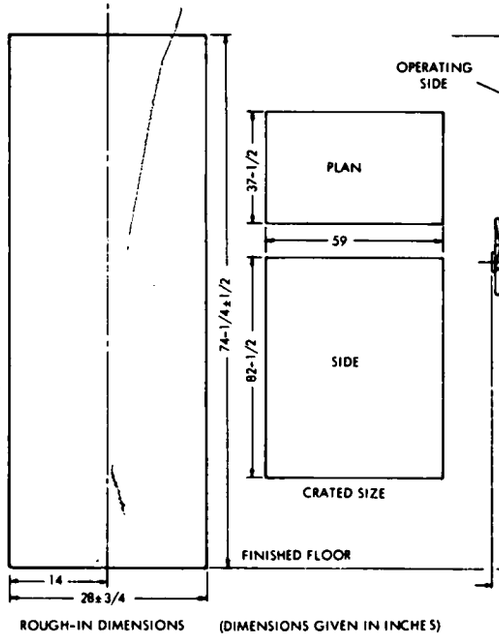
ROUGH-IN:
ALL LINES MUST BE SHORT STUBBED THROUGH FLOOR AND/OR WALL EAR ENOUGH TO ALLOW FOR PIPE COUPLING.

GENERAL:
THIS EQUIPMENT MAY BE EITHER CABINET OR RECESS MOUNTED. IT IS IMPORTANT THAT IN EITHER CASE SUFFICIENT AREA IS PROVIDED TO FACILITATE CLEANING AND MAINTENANCE OPERATIONS. THE SERVICE AREAS INDICATED ARE CONSIDERED ADEQUATE UNDER NORMAL CONDITIONS.

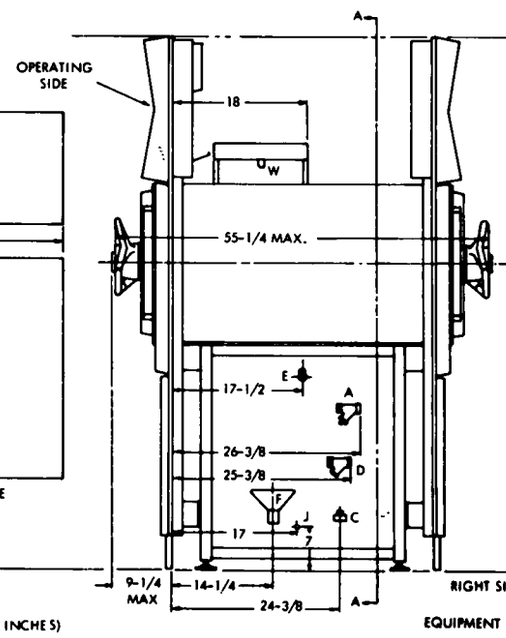
CABINET MODEL:
FREE STANDING CABINET UNIT SHOULD BE LOCATED IN A WELL VENTILATED ROOM WHEREBY VAPORS MAY BE DISPELLED RAPIDLY WHEN A LOAD IS BEING REMOVED FROM THE STERILIZER.

RECESSED INSTALLATION:
IT IS RECOMMENDED THAT A SLIGHT NEGATIVE PRESSURE BE MAINTAINED IN THE AREA OF THE RECESSED PORTION OF THE STERILIZER. GRILLED OPENINGS THROUGH THE WALL INTO THE RECESS AREA SHOULD BE PROVIDED DIRECTLY ABOVE STERILIZER. THROUGH THESE, THE VAPORS WHICH RISE FROM THE OPEN STERILIZER AND LOAD MAY BE DRAWN OFF.

ILLUMINATION:
SUFFICIENT ILLUMINATION SHOULD BE PROVIDED FROM CEILING MOUNTED FIXTURES TO COVER ALL SERVICE AREAS.

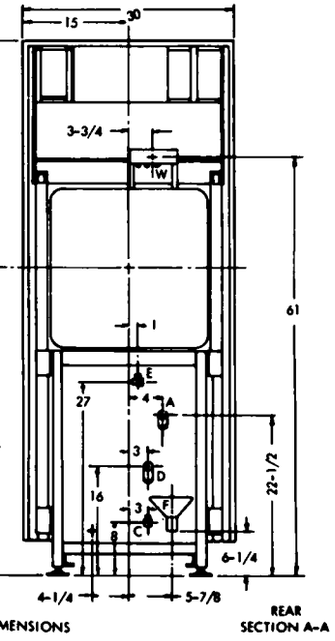


ROUGH-IN DIMENSIONS



(DIMENSIONS GIVEN IN INCHES)

RIGHT SIDE EQUIPMENT



DIMENSIONS REAR SECTION A-A

CHAMBER SIZE	STEAM CONSUMPTION POUNDS/HOUR MAX	STERILIZER HEAT LOSSES BTU/HOUR			LOSSES FROM LOAD ON REMOVAL BTU'S	WATER CONSUMPTION IN G.P.M.	STERILIZER WEIGHT IN POUNDS			
		CABINET	RECESSED FRONT	RECESSED BACK			CABINET MODEL UNCRATED	CABINET MODEL CRATED	RECESSED MODEL UNCRATED	RECESSED MODEL CRATED
20X20X38	6 (CONDITIONING)	300	150	200	600	.6 FOR VACUUM PUMP	850	1000	800	950

Figure 2-4. COMPOSITE DRAWING: 20" x 20" Double Door Sterilizer.

THIS PAGE
INTENTIONALLY LEFT
BLANK

SECTION 3
CONTROL SYSTEM

3-1. GENERAL

All Cryotherm® sterilizers are designed with an automatic control system. This automatic system employs various sensing and timing mechanisms which regulate the sterilizer in predetermined operational stages. When the cycle is begun, the sterilizer will proceed through the various phases in the cycle without further attention, shutting off when the cycle has been completed. All units have a selector button which permits the sterilizer to be operated manually as an overriding feature. However, there is no provision for operating the sterilizer without electricity.

All sterilizers are equipped with manually operated gas and steam supply valves and electrical disconnects. These isolate the unit from the general supply lines when in an off position. Within all systems are fuses, overload devices and safety valves which prevent circuits or piping from being overloaded. Before checking a faulty or malfunctioning control system, make sure all fuses, overload devices and safety valves are in place and operable, that electric, gas, water and steam supply line switches or valves are in correct operating position and that these services are available.

3-2. CYCLE OPERATION

The sterilizer chamber must be preheated to the proper operating temperature (130°F. ±5°) before a cycle can be started.

To preheat the sterilizer chamber to 130°F., close the chamber door but do not engage the locking arms. Turn the power switch "ON". This activates the 110/120 volt control circuit to relays which cause the 208/240 volt strip heaters to heat chamber to 130°F. in approximately 30 minutes. The "READY" light will come on, indicating the chamber is at the proper temperature. At the same time the water in the gas conditioner will heat up to 150°F.

Place the load in the chamber, being careful not to have it touching the chamber walls.

Close the chamber door and lock it securely by turning the handwheel fully clockwise until moderate force is required. Set the exposure timer as desired.

Open gas valve at cylinder and on supply line. The gas pressure gauge will read approximately 60 to 80 pounds per square inch with a fresh cylinder of gas. If gas pressure is less than 30 psig, a fresh cylinder must be installed.

Set the "AUTOMATIC-MANUAL" switch to the "AUTOMATIC" position and momentarily depress the "START" button. The cycle will begin and progress automatically. The "VACUUM" light will come on.

A 20" vacuum will be drawn. A vacuum switch will start the load conditioning timer and open the steam to chamber line to heat the load to a temperature of 130°F. (humidification of the load is inherent with this type of heating cycle).

After 20 minutes the "VACUUM" light will go off and the "CHARGE" light will come on. A mixture of gas and steam will enter the chamber until chamber pressure reaches 8 psig.

At this point the "CHARGE" light will go off and the "STERILIZER" light will come on. The exposure timer will operate for its preset time.

Should the shell temperature exceed 145°F., the "OVER TEMP RESET" button will light up and the cycle will automatically phase to "OFF" through two vacuums. When the shell cools down, the "OVER TEMP RESET" button must be depressed before starting another cycle.

If the gas cylinder pressure should drop below 10 psig, the cycle will be stopped. It will be necessary to replace the gas cylinder to complete the cycle.

When the timer times out, the solenoid valve to the vacuum pump is opened and the pump is run to draw a vacuum of 26" and also the "AIR" light comes on. The vacuum is broken by opening the filtered air solenoid valve to admit filtered air to the chamber, and closed again. A second vacuum is drawn and again broken by admitting filtered air to the chamber.

The "STERILE" light will come on and the buzzer will sound to indicate the end of the sterilizing cycle.

Open the chamber door and press the "STOP" button momentarily. The load may now be removed.

If no one is in attendance when the buzzer sounds, it will shut off automatically after approximately two minutes, but the "STERILE" light will remain on until the door is opened and the "STOP" button is depressed. Immediately the "READY" light will come on.

3-3. CIRCUIT DESCRIPTION

Refer to Figure 3-1 (Electrical Schematic)

With 110/120 volt power available from the branch circuit for operation of the controls and 208/240 volt power available for operation of the vacuum pump motor and heaters, the following occurs:

Power enters L1, passes through the 5 ampere fuse and energizes the synchronous motor in the recorder, causing the motor to run continuously.

When the "ON-OFF" switch is closed, power flows through the fuse light (Power ON) to L2 causing the fuse light to glow. Power from the common terminal on the "ON-OFF" switch provides for the following sequence (or simultaneous operation) of the control devices.

1. The coil of heater relay (HR1) is energized through the normally closed contact of the 115°F. temperature switch causing the normally open contacts of heater relay (HR1) to close. This energizes the auxiliary strip heaters "A" and "B". When the 115°F. temperature is reached the switch contact opens and cuts off heaters "A" and "B".

2. The coil of heater relay (HR3) is energized through the normally closed contacts of the 130°F. temperature switch and over-temperature relay (CR3), causing the normally open contacts of HR3 to close and energize the heating element of control strip heater "C". When the 130°F. temperature is reached, the normally closed temperature switch contact opens, cutting off heater "C". Should the temperature fall below 130°F., the contact would pick up again, re-energizing heater "C".

NOTE

Should chamber temperature exceed 145°F., the coil of over-temperature relay (CR3) would be energized through the 145°F. temperature switch contacts and the "OVER TEMPERATURE" light would come on.

a. The normally open CR3 contact closes and provides a holding circuit through the normally closed over-temperature switch contact to CR3 coil.

b. In addition, the normally closed CR3 contact in the line to HR3 coil opens to assure that heater "C" is de-energized.

To restart the cycle, the over-temperature reset button must be depressed, after chamber temperature drops below 145°F.

3. The coil of the gas conditioner relay (HR2) is energized through the normally closed contact of the gas conditioner thermostat, causing the normally open contacts of HR2 to close. This energizes the electric heating element of the gas conditioner.

4. Terminals 11, 21, 31 and 41 on the Rotary Solenoid Switch are energized.

a. With the Rotary Solenoid Switch in the "OFF" position, current flows through terminal 41 to terminal 45. This terminal in turn supplies power to the normally open contacts of the 125°F. temperature switch. When chamber temperature exceeds 125°F., current continues through the normally closed contact of the 135°F. temperature switch and turns the "READY" light on. If the temperature exceeds 135°F., the "READY" light goes off.

b. In addition (from terminal 45), filtered air valves "A" and "B" are energized through the normally closed contacts of relay CR4.

c. **For Units Shipped Before 1/71.** The circuit is so arranged that any time the "READY" light is on, power is available at the common terminal of the door switch. When the door is closed, the door switch actuates and carries power to the "START" switch. When the "START" button is depressed, power is applied to the AC input of the rectifier causing a current pulse at the DC output of the full wave rectifier which energizes the Rotary Solenoid coil. This action advances the switch one position resulting in power being applied to terminals 18, 28, 38 and 44 (Initial or Pre VAC phase).

For Units Shipped After 1/71. The circuit is so arranged that glowing of the "READY" light indicates that power is available at the door switch common terminal. Closing the door actuates the door switch which carries power to the "START" switch. When the "START" button is depressed, power is applied to the pulse timer motor through the door switch and pulse timer normally closed contact #1. When the pulse timer cam has rotated one-half turn, pulse timer normally open contact #2 closes momentarily and sends a current pulse to the AC input of the rectifier, advancing the Rotary Switch one position. This results in power being applied to terminals 18, 28, 38, and 44 (Initial or Pre VAC phase).

5. With terminals 18, 28, 38 and 44 energized, the following occurs:

a. Power from terminal 18 energizes the vacuum pump water valve, the drain line solenoid valve and the vacuum pump starter coil.

b. Power from terminal 44 turns the "VACUUM" light on.

c. When the vacuum pump produces a vacuum of 20 inches Hg in the chamber, power from terminal 28 energizes the pulse timer motor through the normally open contacts of the 20 inch vacuum switch, "MANUAL-AUTOMATIC" switch, door switch and normally closed pulser timer switch (1). When the pulse timer cam has revolved 1/4 turn, Switch #1 actuates, the normally closed contact of the pulse timer opens, and power from the common terminal on the "ON-OFF" switch supplies power through the normally open contact of pulse timer switch (1) to keep the pulse timer motor running. When the pulse timer cam has revolved 1/2 turn, the normally open contact of pulse timer switch (2) closes momentarily and sends a pulse of current to the AC input of the rectifier, advancing the Rotary Switch one position. Power is removed from terminals 18, 28, 38 and 44 and applied to terminals 17, 27, 37 and 43 (Condition phase).

NOTE

A normally open over-temperature relay contact (CR3) is located between terminal 38 and the common terminal of the "MANUAL-AUTOMATIC" switch. Should chamber temperature exceed 145°F., this contact would close to keep the pulse timer motor energized, advancing the Rotary Switch three positions (to terminal 35). This action immediately evacuates the chamber (by-passing the Condition and Sterilize phases) and places the sterilizer in the Post VAC phase. The load in the sterilizer will require a complete re-sterilization after the cause of excess temperature has been found and corrected.

6. With terminals 17, 27, 37 and 43 energized, the following occurs:

a. Since terminal 17 and 18 are jumpered together, the vacuum pump continues to run.

b. Power from terminal 27 energizes the delay (conditioning) timer clutch. In addition, the delay timer motor is energized through a normally closed delay timer contact while the steam conditioner valve (#1) is energized through the normally closed contacts of the delay timer and 130°F. #2 temperature switch.

c. Power from terminal 43 keeps the vacuum light on.

d. When the delay timer times out (20 minutes), the normally open contact of the delay timer closes and conducts power to the input of the pulse timer and advances the Rotary Switch one position. Power is removed from terminals 17, 27, 37 and 43 and applied to terminals 16, 26, 36 and 42 (Sterilize phase).

7. With terminals 16, 26, 36 and 42 energized, the following occurs:

a. Power from terminal 26 energizes the exposure timer clutch. In addition, the gas charging valve, steam conditioner valve (#2) and the "CHARGE" light are all energized through the normally closed chamber pressure switch contact.

b. When the gas pressure in the chamber reaches 8 psig, the normally closed contact of the pressure switch opens and the normally open contact closes. This de-energizes the gas charging valve, steam conditioner valve (#2) and the "CHARGE" light.

c. The exposure timer motor and "STERILIZE" light are energized through the normally closed contact of the exposure timer switch.

d. When the exposure timer motor runs for the length of time set on the dial, the exposure timer switch actuates. The normally closed contact opens, which de-energizes the timer motor and shuts it off as well as de-energizing the "STERILIZE" light which goes out.

e. The normally open contact of the exposure timer switch closes and conducts power through the "MANUAL-AUTOMATIC" switch, door switch and to the input of the pulse timer. With the pulse timer motor re-energized, the Rotary Switch advances one step removing power from terminals 16, 26, 36 and 42 and applying power to terminals 15, 25 and 35 (First Post Vac phase).

8. With terminals 15, 25 and 35 energized, the following occurs:

a. Power from terminal 15 energizes the vacuum pump starter, drain line solenoid valve and the vacuum pump water valve.

b. Power from terminal 35 turns the "AIR" light on.

c. Power from terminal 25 is applied to the common terminal of the final vacuum switch. When the vacuum in the chamber reaches 26" Hg, the normally open contact of the final vacuum switch closes. Power passes through the "MANUAL-AUTOMATIC" switch, door switch and pulse timer switch (1) to advance the Rotary Switch one position. Power is removed from terminals 15, 25 and 35 and applied to terminals 14, 24, 34 and 48 (First Air phase).

9. With terminals 14, 24, 34 and 48 energized, the following occurs:

a. Power from terminal 14 energizes the coil of filtered air relay CR4. The normally open contact of CR4 closes and energizes filtered air valves "A" and "B". The normally closed CR4 contact opens to prevent feedback from turning on the "READY" light through the 125° and 135°F. temperature switch contacts.

b. Power from terminal 48 keeps the "AIR" light on.

c. Power from terminal 24 energizes the coil of vacuum alarm relay CR2. When the chamber vacuum is broken to 1" Hg, power from terminal 14 passes through the normally open contact of the vacuum alarm switch (now closed). Since CR2 is energized, the normally closed contact opens to prevent the buzzer and "STERILE" light from being energized. With CR2 normally open contact now closed, power passes through the "MANUAL-AUTOMATIC" switch, door switch and pulse timer switch (1) to advance the Rotary Switch one step. Power is removed from terminals 14, 24, 34 and 48 and applied to terminals 13, 23, 33 and 47 (Second Post-Vac phase).

10. Since terminals 13 and 15, 23 and 25 and 35 are jumpered together, the same circuits as described in Step 8 for the first Post-Vac phase are energized. The same sequence of operation for this phase occurs during the second Post-Vac phase. However, when the Rotary Switch advances one position, power is removed from terminals 13, 23, 33 and 47 and applied to terminals 12, 22, 32 and 46 (Second Air phase).

11. With terminals 12, 22, 32 and 46 energized, the following occurs:

a. Power from terminal 12 energizes the coil of filtered air relay CR4. The normally open contact of CR4 closes and energizes filtered air valves "A" and "B". The normally closed CR4 contact opens to prevent feedback from turning on the "READY" light.

b. When chamber vacuum is broken to 1" Hg, power from terminal 12 passes through the normally open contact of the vacuum alarm switch and energizes the buzzer through the normally closed CR2 and time delay relay contacts.

c. The same electrical signal energizes the coil of the time delay relay, CR1 relay and also turns on the "STERILE" light.

d. With CR1 coil energized, the normally closed CR1 contact opens to turn off the "AIR" light.

e. After two minutes, the normally closed contact of the time delay relay opens to turn off the buzzer.

f. **For Units Shipped Before 1/71.** When the "STOP" button is depressed, power from terminal 46 energizes the rectifier, causing the Rotary Switch to advance one step. Power is removed from terminals 12, 22, 32 and 46 and applied to terminals 11, 21, 31 and 45 (OFF position).

For Units Shipped After 1/71. When the "STOP" button is depressed, power from terminal 46 energizes the pulse timer causing the Rotary Switch to advance one step. Power is removed from terminals 12, 22, 32 and 46 and applied to terminals 11, 21, 31 and 45 (OFF position).

12. With terminals 11, 21, 31 and 45 energized, the following occurs:

a. The "STERILE" light goes off.

b. If chamber temperature is in the correct range (125°F.), power from terminal 45 energizes the "READY" light.

c. In addition, filtered air valves "A" and "B" are held open to break any small vacuum remaining in the chamber so that the door may be opened.

NOTE

The circuit description for the double door sterilizers is essentially the same as for a single door unit except that a rear door switch, rear "READY" and "STERILE" lights have been added.

3-4. ELECTRICAL SCHEMATIC, WIRING DIAGRAM, WIRE LIST AND PIPING DIAGRAM

The following drawings show details of the various electrical and plumbing systems employed on Cryotherm® sterilizers.

THIS PAGE INTENTIONALLY LEFT BLANK

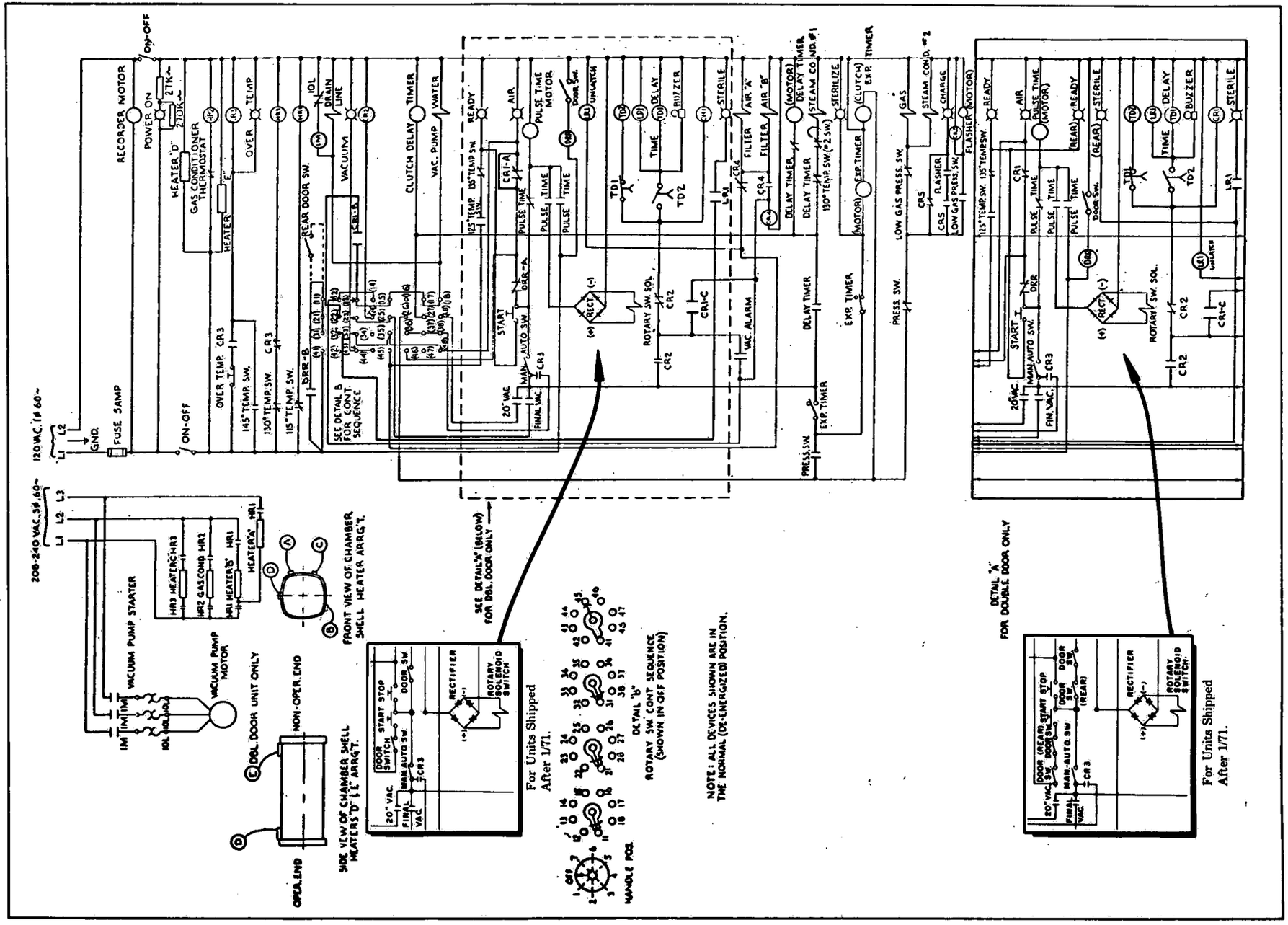


Figure 3-1. ELECTRICAL SCHEMATIC.

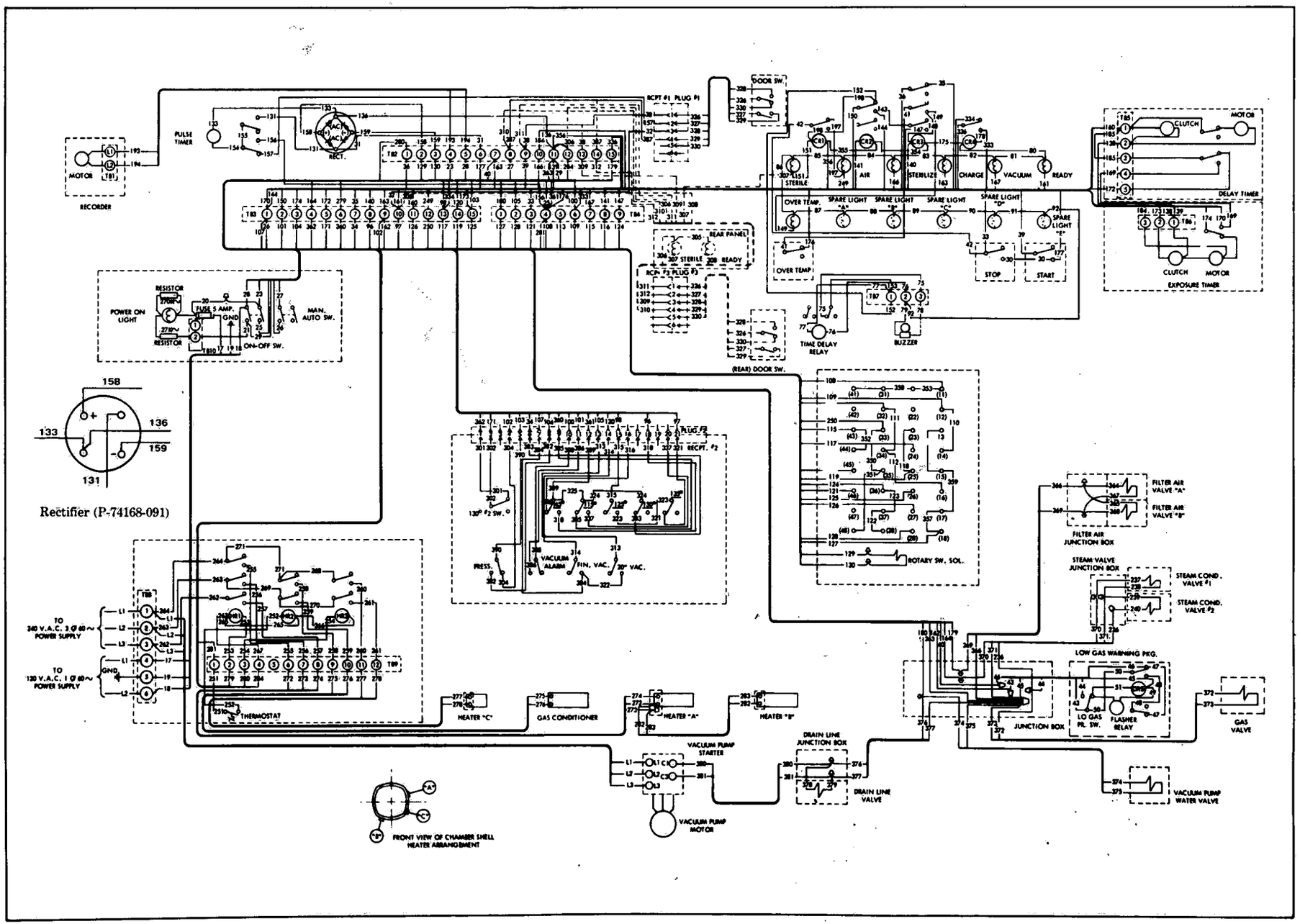


Figure 3-2. WIRING DIAGRAM.
(Units Shipped Before 4/69)
3-7/3-8

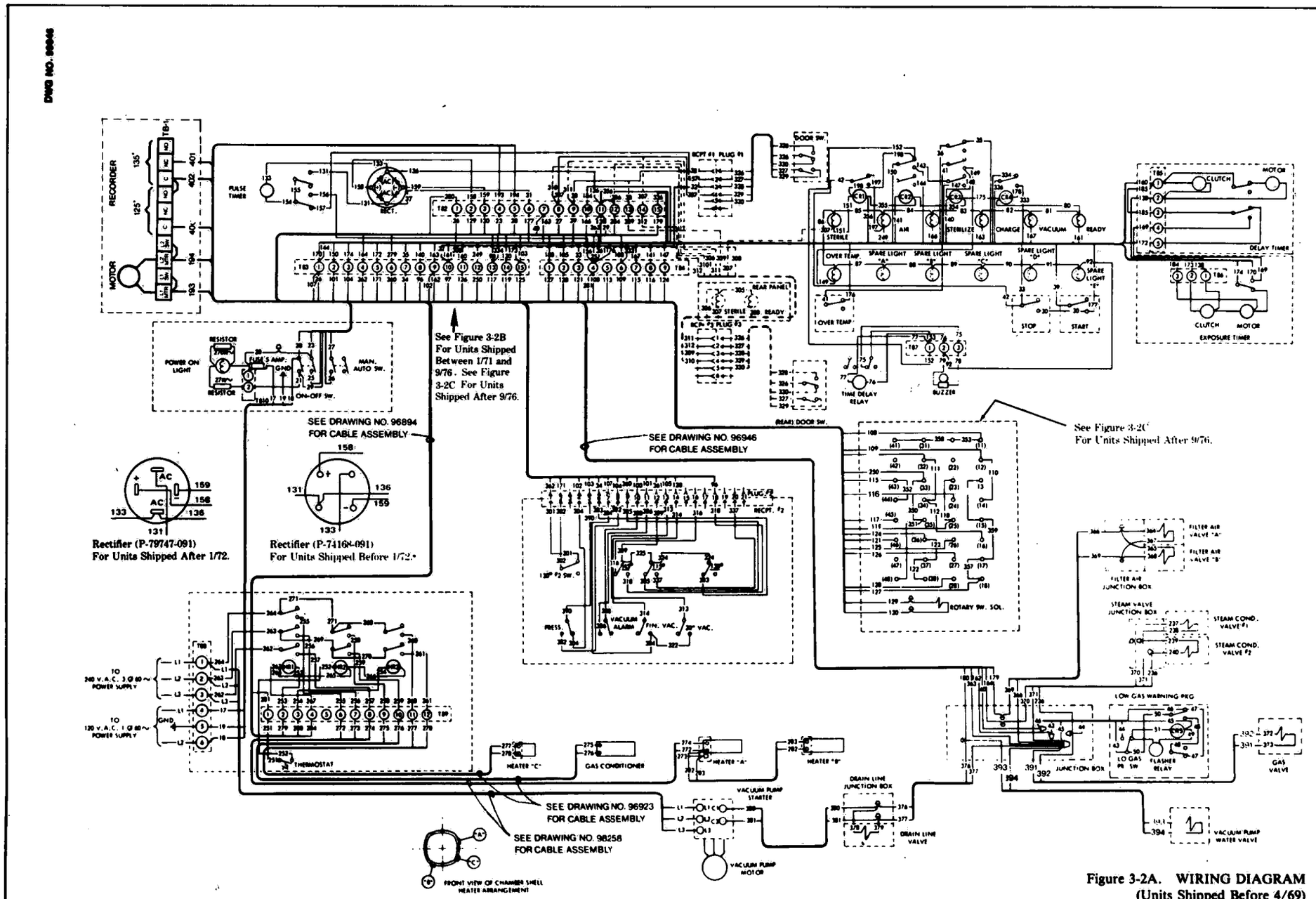


Figure 3-2A. WIRING DIAGRAM
(Units Shipped Before 4/69)

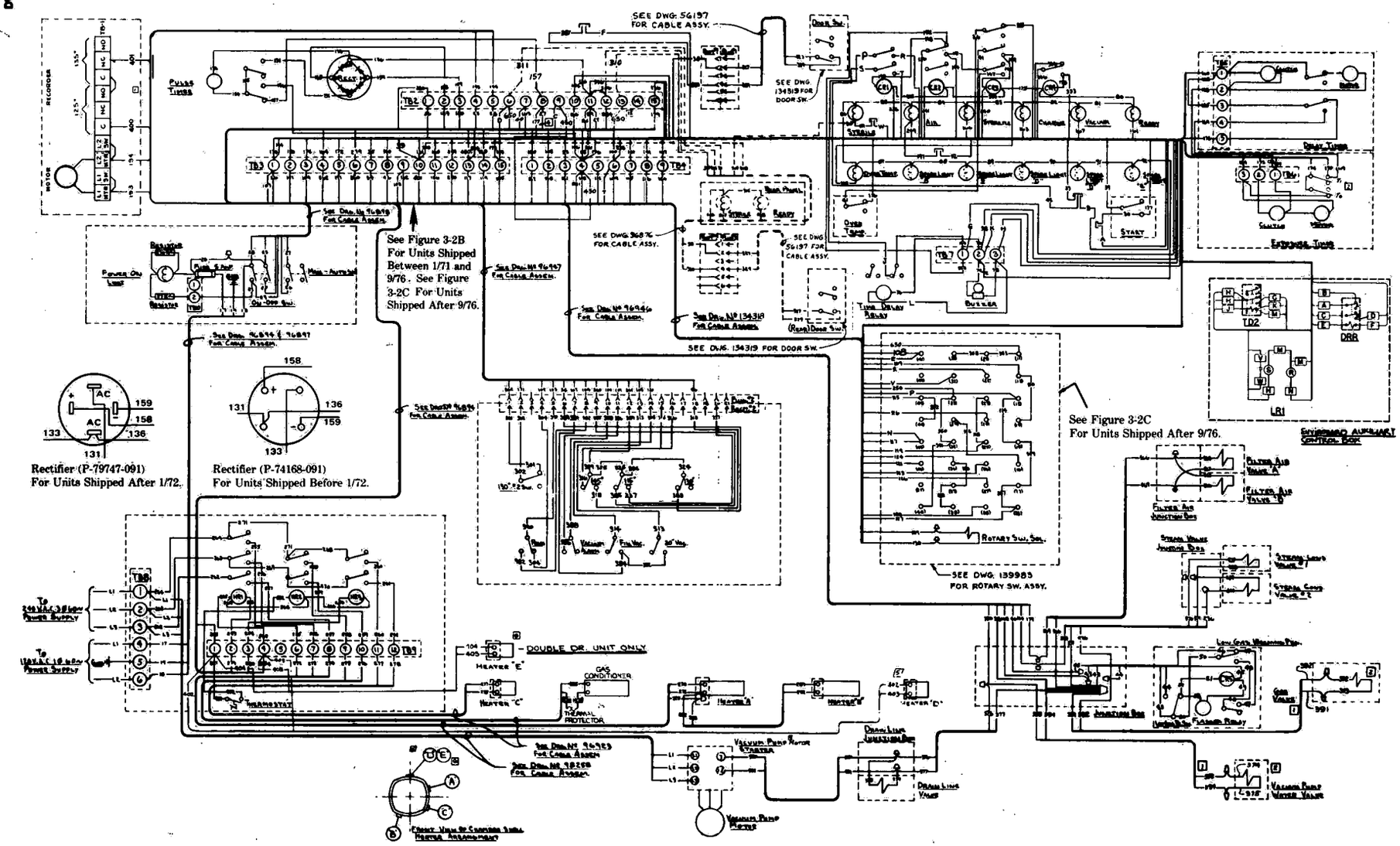


Figure 3-2A. WIRING DIAGRAM
(Units Shipped After 4/69)

THIS PAGE
INTENTIONALLY LEFT
BLANK

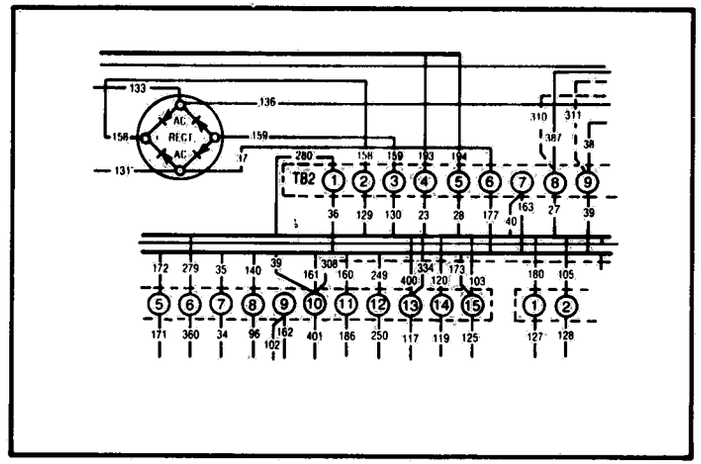
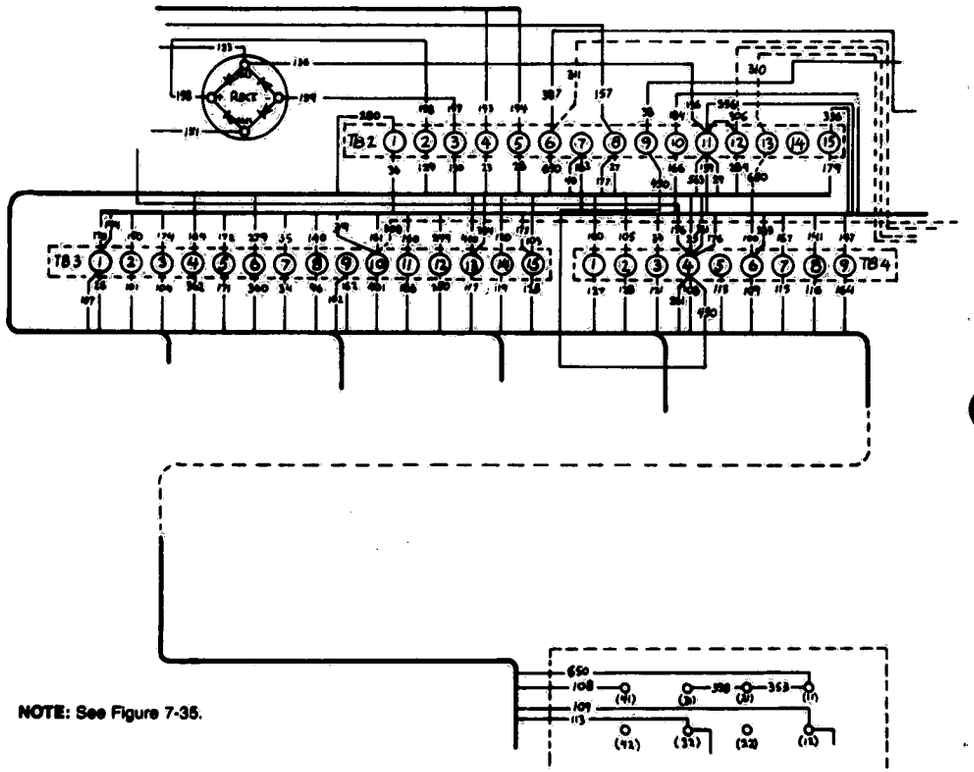


Figure 3-2B. WIRING DIAGRAM MODIFICATIONS
(Units shipped between 1/71 and 9/76).



NOTE: See Figure 7-35.

Figure 3-2C. WIRING DIAGRAM MODIFICATIONS
(Units shipped after 9/76).

TABLE 3-1. GENERAL WIRE LIST.

WIRE NO.	COLOR	FROM/	CONNECTING METHOD	TO/	CONNECTING METHOD	NOTES
L1	Blue	TB8-1	#6 Term.	Vac Pump Starter "L1"	#6 Term.	
L2	Orange	TB8-2	#6 Term.	Vac Pump Starter "L2"	#6 Term.	
L3	Red	TB8-3	#6 Term.	Vac Pump Starter "L3"	#6 Term.	
17	Black	TB8-4	#6 Term.	Fuse	Solder	
18	White	TB8-6	#6 Term.	On-Off Sw	Tab Term.	
19	Green	TB8-5	#6 Term.	On-Off Sw Frame	#6 Term.	
20	Black	Fuse	Solder	Splice (Wire #23)	Screw Term.	
21	White	TB10-2	Solder	On-Off Sw	Tab Term.	
23	Black	On-Off Sw	Tab Term.	TB2-4	#6 Term.	
25	White/Blk	On-Off Sw	Tab Term.	TB4-4	#6 Term.	
26	Pink	Man-Auto Sw	Tab Term.	TB3-1	#6 Term.	
27	W/Tan	Man-Auto Sw	Tab Term.	TB2-8	#6 Term.	
28	White	On-Off Sw	Tab Term.	TB2-5	#6 Term.	
29	White	On-Off Sw	Tab Term.	TB2-11	#6 Term.	
30	Black	Start Sw	Solder	Stop Sw	Solder	
31	Black	Rectifier (AC)	Solder	TB2-6	#6 Term.	(3)
32	Black	TB3-10	#6 Term.	Recpt 1-3	Solder	(10)
33	Tan	Stop Sw & Wire #42	Solder	TB4-3	#6 Term.	
34	Yellow	Plug 2-6	Solder	TB3-7	#6 Term.	
35	W/Brown	CR3	Solder	TB3-7	#6 Term.	
36	Yellow	CR3	Solder	TB2-1	#6 Term.	
38	Blue	TB2-13	#6 Term.	Recpt 1-1	Solder	(2)(11)
38	Blue	TB2-9	#6 Term.	Recpt 1-1	Solder	(1)
39	Blue	Start Sw	Solder	TB2-9	#6 Term.	(12)
40	Violet	TB2-7	#6 Term	Junction Box & Wire #46	Screw Term	
41	Violet	CR3	Solder	Over Temp. Sw	Solder	
42	Tan	Stop Sw	Solder	CR1	Solder	
43	W/Blk/Red	CR5	Solder	Junction Box	Screw Term	
44	Blue	Low Gas Press Sw	Solder	Junction Box	Screw Term	
45	White	CR5	Solder	Junction Box	Screw Term	
46	Violet	CR5	Solder	Junction Box	Screw Term	
47	Violet	CR5	Solder	Flasher Relay	Solder	
48	W/Blue	CR5	Solder	Flasher Relay	Solder	
49	Orange	Flasher Relay (Motor)	Prewired	CR5	Solder	
50	W/Blk/Red	Low Gas Press Sw	Solder	CR5	Solder	
51	Pink	Low Gas Press Sw	Solder	CR5	Solder	
52	Orange	Flasher Relay (Motor)	Prewired	Low Gas Press Sw	Solder	
75	Brown	TB7-3	#6 Term.	Time Delay Relay	Tab Term.	
76	White	TB7-2	#6 Term.	Time Delay Relay	Tab Term.	
77	White/Yellow	TB7-1	#6 Term.	Time Delay Relay	Tab Term.	
78	White/Orange	Buzzer	#6 Term.	TB7-3	#6 Term.	
79	White	TB7-2	#6 Term.	Buzzer	#6 Term.	
80	White	CR4 & Wire #175	Solder	Ready Light & Wire #81	Solder	
81	White	Ready Light	Solder	Vacuum Light & Wire #82	Solder	
82	White	Vacuum Light	Solder	Charge Light & Wire #83	Solder	
83	White	Charge Light	Solder	Sterilize Light & Wire #84	Solder	
84	White	Sterilize Light	Solder	Air Light & Wire #85	Solder	
85	White	Air Light	Solder	Sterile Light & Wire #86	Solder	
86	White	Sterile Light	Solder	Over Temp Light & Wire #87	Solder	
87	White	Over Temp Light	Solder	Spare Lamp "A" & Wire #88	Solder	
88	White	Spare Lamp "A"	Solder	Spare Lamp "B" & Wire #89	Solder	
89	White	Spare Lamp "B"	Solder	Spare Lamp "C" & Wire #90	Solder	

TABLE 3-1. GENERAL WIRE LIST (CONT).

WIRE NO.	COLOR	FROM/	CONNECTING METHOD	TO/	CONNECTING METHOD	NOTES
90	White	Spare Lamp "C"	Solder	Spare Lamp "D" & Wire #91	Solder	
91	White	Spare Lamp "D"	Solder	Spare Lamp "E" & Wire #92	Solder	
92	White	Spare Lamp "E"	Solder	TB7-2	#6 Term.	
96	W/Blk/Bl	Plug #2-18	Solder	TB3-8	#6 Term.	
97	W/Black	Plug #2-21	Solder	TB3-10	#6 Term.	(4)
98	Blue	Plug #2-15	Solder	TB3-13	#6 Term.	(4)
100	W/Blk/Yellow	Plug #2-10	Solder	TB4-6	#6 Term.	
101	W/Gray	Plug #2-11	Solder	TB3-2	#6 Term.	
102	W/Blk/Red	Plug #2-4	Solder	TB3-9	#6 Term.	
103	Gray	Plug #2-5	Solder	TB3-15	#6 Term.	
104	W/Blk/Gray	Plug #2-8	Solder	TB3-3	#6 Term.	
105	W/Blue	Plug #2-13	Solder	TB4-2	#6 Term.	
107	Pink	Plug #2-7	Solder	TB3-1	#6 Term.	
108	Violet	Rotary Sw-11	#6 Term.	TB4-4	#6 Term.	(9)
109	W/Blk/Yellow	Rotary Sw-12	#6 Term.	TB4-6	#6 Term.	
110	W/Blk/Yellow	Rotary Sw-12	#6 Term.	Rotary Sw-14	#6 Term.	
111	Red	Rotary Sw-32	#6 Term.	Rotary Sw-34	#6 Term.	
112	Red	Rotary Sw-34	#6 Term.	Rotary Sw-16	#6 Term.	
113	Red	Rotary Sw-32	#6 Term.	TB4-5	#6 Term.	
114	W/Brown	Rotary Sw-13	#6 Term.	Rotary Sw-15	#6 Term.	
115	Orange	Rotary Sw-43	#6 Term.	TB4-7	#6 Term.	
116	Yellow	Rotary Sw-24	#6 Term.	TB4-8	#6 Term.	
117	Blue	Rotary Sw-45	#6 Term.	TB3-13	#6 Term.	
118	Brown	Rotary Sw-23	#6 Term.	Rotary Sw-25	#6 Term.	
119	Brown	Rotary Sw-25	#6 Term.	TB3-14	#6 Term.	
120	Blue	Plug #2-14	Solder	TB3-14	#6 Term.	
121	Tan	Rotary Sw-46	#6 Term.	TB4-3	#6 Term.	
122	W/Orange	Rotary Sw-37	#6 Term.	Rotary Sw-38	#6 Term.	
123	W/Orange	Rotary Sw-36	#6 Term.	Rotary Sw-37	#6 Term.	
124	W/Orange	Rotary Sw-36	#6 Term.	TB4-9	#6 Term.	
125	Gray	Rotary Sw-26	#6 Term.	TB3-15	#6 Term.	
126	W/Blk/Orange	Rotary Sw-27	#6 Term.	TB3-11	#6 Term.	
127	W/Brown	Rotary Sw-18	#6 Term.	TB4-1	#6 Term.	
128	W/Blk	Rotary Sw-28	#6 Term.	TB4-2	#6 Term.	
129	Blue	Rotary Sw Solenoid	Screw Term.	TB2-2	#6 Term.	
130	Red	Rotary Sw Solenoid	Screw Term.	TB2-3	#6 Term.	
131	Black	Pulse Timer	Solder	Rectifier (AC) & Wire #31	Solder	
133	Black	Pulse Timer Motor	Pre-wired	Rectifier (AC) & Wire #136	Solder	
136	White	Rectifier (AC)	Solder	TB2-11	#6 Term.	
138	White	Delay Timer TB5-2	#6 Term.	Exp Timer TB6-1	#6 Term.	
139	White	Exp Timer TB6-1	#6 Term.	TB2-11	#6 Term.	
140	W/Blk/Blue	CR3 & Wire #148	Solder	TB3-8	#6 Term.	
141	Yellow	CR2	Solder	TB4-8	#6 Term.	
143	Pink	CR2 & Wire #144	Solder	CR3	Solder	
144	Pink	CR2	Solder	TB3-1	#6 Term.	
147	W/Orange	CR3	Solder	TB4-9	#6 Term.	
148	W/Blk/Bl	CR3 & Wire #149	Solder	CR3	Solder	
149	W/Blk/Bl	CR3	Solder	Over Temp Light	Solder	
150	W/Green	CR2	Solder	TB3-2	#6 Term.	
151	W/Yellow	CR1 & Wire #198	Solder	Sterile Light	Solder	
152	W/Yellow	CR2 & Wire #198	Solder	TB7-1	#6 Term.	
153	W/Yellow	TB7-1	#6 Term.	Time Delay Relay	Tab Term.	
154	Black	Pulse Timer Motor	Prewired	Pulse Timer & Wire #155	Solder	
155	Orange	Pulse Timer	Solder	Pulse Timer	Solder	
156	Violet	Pulse Timer	Solder	TB4-4	#6 Term.	
157	W/Tan	Pulse Timer	Solder	Recpt #1-2	Solder	(13)
158	Blue	Rectifier (+)	Solder	TB2-2	#6 Term.	

TABLE 3-1. GENERAL WIRE LIST (CONT).

WIRE NO.	COLOR	FROM/	CONNECTING METHOD	TO/	CONNECTING METHOD	NOTES
159	Red	Rectifier (-)	Solder	TB2-3	#6 Term.	
160	W/Blk/Orange	Delay Timer TB5-1	#6 Term.	TB3-11	#6 Term.	
161	W/Blk	Ready Light	Solder	TB3-10	#6 Term.	
162	W/Blk/Red	TB3-9	#6 Term	Junction Box Wire #43	Screw Term	
163	W/Blk/Red	Charge Light	Solder	TB2-7	#6 Term	
164	Orange	TB3-4	#6 Term.	Junction Box Wire #370	Screw Term.	
166	W/Blk/Blue	Sterilize Light	Solder	TB2-10	#6 Term.	
167	Orange	Vacuum Light	Solder	TB4-7	#6 Term.	
169	Pink	Delay Timer TB5-4	#6 Term.	Exp Timer Sw	Solder	
170	Pink	Exp Timer	Solder	TB3-1	#6 Term.	
171	W/Violet	Plug #2-2	Solder	TB3-5	#6 Term.	
172	W/Violet	Delay Timer TB5-5	#6 Term.	TB3-5	#6 Term.	
173	Gray	(Exp Timer) TB6-2	#6 Term.	TB3-15	#6 Term.	
174	W/Blk/Green	Exp Timer	Solder	TB3-3	#6 Term.	
175	White	CR3	Solder	CR4	Solder	
176	Violet	Over Temp. Sw.	Solder	TB4-4	#6 Term	
177	Black	Start Sw & Wire #30	Solder	TB2-6	#6 Term.	(5)
178	Blue	CR4	Solder	CR4	Solder	
179	W/Blk/Yellow	TB2-15	#6 Term.	Junction Box Wire #369	Screw Term.	
180	W/Brown	TB4-1	#6 Term.	Junction Box Wires #374 & 376	Screw Term.	
184	W/Blk/Blue	(Exp Timer) TB6-3	#6 Term.	TB2-10	#6 Term.	
185	W/Blk/Orange	(Delay Timer) TB5-1	#6 Term.	(Delay Timer) TB5-3	#6 Term.	
193	Black	TB2-4	#6 Term.	TB1-L1 (Recorder)	#6 Term.	
194	White	TB2-5	#6 Term.	TB1-L2 (Recorder)	#6 Term.	
197	W/Blk	CR-1	Solder	Air Light	Solder	
198	W/Yellow	CR-1	Solder	CR-2	Solder	
236	W/Blk/Red	Junction Box	Screw Term.	Steam Valve, Junction Box and Wire #240	Screw Term.	
237	White	Steam Cond Valve #1	Pre-wired	Steam Valve, Junction Box and Wire #370	Screw Term.	
238	White	Steam Cond Valve #1	Pre-wired	Steam Valve, Junction Box and Wires #371 & 239	Screw Term.	
239	White	Steam Cond Valve #2	Pre-wired	Steam Valve, Junction Box	Screw Term.	
240	White	Steam Cond Valve #2	Pre-wired	Steam Valve, Junction Box	Screw Term.	
249	W/Blk/Green	Air Light	Solder	TR3-12	#6 Term.	
250	W/Blk/Green	Rotary Sw-33	#6 Term.	TB3-12	#6 Term.	
251	Violet	TB9-1	#6 Term.	Thermostat	#8 Term.	
252	Violet	Thermostat	#8 Term.	HR-2	Solder	
253	Violet	TB9-2	#6 Term.	HR-1	Solder	
254	Yellow	TB9-3	#6 Term.	HR-3	Solder	
255	Yellow	TB9-6	#6 Term.	HR-1	Solder	
256	Black	TB9-7	#6 Term.	HR-1	Solder	
257	Brown	TB9-8	#6 Term.	HR-1	Solder	
258	Orange	TB9-9	#6 Term.	HR-2	Solder	
259	Blue	TB9-10	#6 Term.	HR-2	Solder	
260	Red	HR-3	Solder	TB9-11	#6 Term.	
261	Yellow	HR-3	Solder	TB9-12	#6 Term.	
262	Red	TB8-3	#6 Term.	HR-1	#6 Term.	
263	Orange	TB8-2	#6 Term.	HR-1	Solder	
264	Blue	TB8-1	#6 Term.	HR-1	Solder	
265	White	HR-1	Solder	HR-2	Solder	
266	White	HR-2	Solder	HR-3	Solder	
267	White	TB9-4	#6 Term.	HR-1	Solder	
268	Blue	HR-2	Solder	HR-3	Solder	
269	Orange	HR-1	Solder	HR-2	Solder	
270	Orange	HR-2	Solder	HR-3	Solder	

TABLE 3-1. GENERAL WIRE LIST (CONT).

WIRE NO.	COLOR	FROM/	CONNECTING METHOD	TO/	CONNECTING METHOD	NOTES
271	Blue	HR-1	Solder	HR-2	Solder	
272	Yellow	TB9-6	#6 Term.	Heater "A" & Wire #282	#12 Term.	
273	Black	TB9-7	#6 Term.	Heater "A" Box & Wire #283	Screw Term.	
274	Brown	TB9-8	#6 Term.	Heater "A"	#12 Term.	
275	Orange	TB9-9	#6 Term.	Gas Cond	#6 Term.	
276	Blue	TB9-10	#6 Term.	Gas Cond	#6 Term.	
277	Red	TB9-11	#6 Term.	Heater "C"	#12 Term.	
278	Yellow	TB9-12	#6 Term.	Heater "C"	#12 Term.	
279	White/Brown	TB9-2	#6 Term.	TB3-6	#6 Term.	
280	Yellow	TB9-3	#6 Term.	TB2-1	#6 Term.	
281	Violet	TB9-1	#6 Term.	TB4-4	#6 Term.	
282	Yellow	Heater "A"	#12 Term.	Heater "B"	#12 Term.	
283	Black	Heater "A" Box	Screw Term.	Heater "B"	#12 Term.	
284	White	TB9-4	#6 Term.	TB2-12	#6 Term.	
301	Violet	Recpt #2-1	Solder	130° Water Valve Temp Sw #2	#6 Term.	
302	Orange	Recpt #2-2	Solder	130° Water Valve Temp Sw #2	#6 Term.	
304	W/Blk/Red	Recpt #2-4	Solder	Press Sw	Solder	
305	White	Sterile Light (rear panel)	Solder	Ready Light (rear panel)	Solder	(2)
306	White	TB2-12	#6 Term.	Sterile Light (rear panel)	Solder	(2)
307	Gray	Sterile Light	Solder	Sterile Light (rear panel)	Solder	(2)
308	W/Blk/Orange	TB3-10	#6 Term.	Ready Light (rear panel)	Solder	(2)
309	Orange	TB2-13	#6 Term.	Recpt #3-3	Solder	(2)(14)
310	W/Blk/Gray	TB2-8	#6 Term.	Recpt #3-4	Solder	(2)(15)
311	W/Gray	TB2-9	#6 Term.	Recpt #3-1	Solder	(2)(16)
312	Blue	TB2-14	#6 Term.	Recpt #3-2	Solder	(2)(17)
313	W/Blue	Recpt #2-13	Solder	20" Vac Sw	Solder	
314	Black	Recpt #2-14	Solder	Fin Vac	Solder	
315	W/Brown	Recpt #2-15	Solder	125° Temp Sw	#6 Term.	(4)
316	Blue	Recpt #2-16	Solder	145° Temp Sw	#6 Term.	
318	W/Blk/Blue	Recpt #2-18	Solder	145° Temp Sw	#6 Term.	
321	W/Yellow	Recpt #2-21	Solder	135° Temp Sw	#6 Term.	(4)
322	Pink	Fin Vac Sw	Solder	20" Vac Sw	Solder	
323	Pink	135° Temp Sw	#6 Term.	125° Temp Sw	#6 Term.	(4)
324	Violet	115° Temp. Sw	#6 Term	130° Temp. Sw #1	#6 Term	
325	Violet	145° Temp. Sw #1	#6 Term	115° Temp. Sw	#6 Term	
326	W/Gray	Plug #1-1	Solder	Door Sw	#6 Term.	(1)
326	W/Gray	Plug #3-1	Solder	Door Sw (rear)	#6 Term.	(2)(18)
327	Blue	Plug #1-2	Solder	Door Sw	#6 Term.	(1)
327	Blue	Plug #3-2	Solder	Door Sw (rear)	#6 Term.	(2)
328	Orange	Plug #1-3	Solder	Door Sw	#6 Term.	(1)
328	Orange	Plug #3-3	Solder	Door Sw (rear)	#6 Term.	(2)(19)
329	W/Blk/Green	Plug #1-4	Solder	Door Sw	#6 Term.	(1)
329	W/Blk/Green	Plug #3-4	Solder	Door Sw (rear)	#6 Term.	(2)
330	Violet	Plug #1-5	Solder	Door Sw	#6 Term.	(1)
330	Violet	Plug #3-5	Solder	Door Sw (rear)	#6 Term.	(2)(20)
333	W/Blk/Y	TB4-6	#6 Term.	CR4	Solder	
334	Blue	TB3-13	#6 Term.	CR4	Solder	
336	W/Blk/Bl	TB2-15	#6 Term.	CR4	Solder	
337	W/Tan	Recpt 2-20	Solder	115° Temp Sw	#6 Term.	
350	W/Blk/Green	Rotary Sw-33	#6 Term.	Rotary Sw-35	#6 Term.	
351	W/Blk/Green	Rotary Sw-35	#6 Term.	Rotary Sw-48	#6 Term.	
352	Orange	Rotary Sw-43	#6 Term.	Rotary Sw-44	#6 Term.	
353	Violet	Rotary Sw-11	#6 Term.	Rotary Sw-21	#6 Term.	
354	White	CR-2	Solder	CR-3 & Wire #175	Solder	
355	White	CR-1	Solder	CR-2 & Wire #354	Solder	
356	White	TB2-11	#6 Term.	CR-1 & Wire #355	Solder	

TABLE 3-1. GENERAL WIRE LIST (CONT).

WIRE NO.	COLOR	FROM/	CONNECTING METHOD	TO/	CONNECTING METHOD	NOTES
357	W/Brown	Rotary Sw-17	#6 Term.	Rotary Sw-18	#6 Term.	
358	Violet	Rotary Sw-21	#6 Term.	Rotary Sw-31	#6 Term.	
359	W/Brown	Rotary Sw-15	#6 Term.	Rotary Sw-17	#6 Term.	
360	W/Brown	Plug #2-9	Solder	TB3-6	#6 Term.	
361	Violet	Plug #2-12	Solder	TB4-4	#6 Term.	
362	Orange	Plug #2-1	Solder	TB3-4	#6 Term.	
363	White	TB2-11	#6 Term.	Junction Box & Wires #373, 45, 375, 377, 366, 371	Screw Term.	
364	Blue	Filter Air Sol. Valve A	Prewired	Filter Air Junction Box	Screw Term.	
365	Blue	Filter Air Sol. Valve B	Prewired	Filter Air Junction Box		
366	White	Junction Box	Screw Term.	Filter Air Junction Box Wires #365 & 364	Screw Term.	
367	Blue	Filter Air Sol. Valve A	Prewired	Filter Air Junction Box	Screw Term.	
368	Blue	Filter Air Sol. Valve B	Prewired	Filter Air Junction Box	Screw Term.	
369	W/Blk/Yellow	Junction Box	Screw Term.	Filter Air Junction Box Wires #367 & 368	Screw Term.	
370	Orange	Steam Valve Junction Box	Screw Term.	Junction Box	Screw Term.	
371	Red	Steam Valve Junction Box	Screw Term.	Junction Box	Screw Term.	
372	Blue	Gas Solenoid Valve	Pre-wired	Junction Box	Screw Term.	
373	Blue	Gas Solenoid Valve	Pre-wired	Junction Box	Screw Term.	
374	Blue	Vac Pump Water Sol. Valve	Pre-wired	Junction Box	Screw Term.	
375	Blue	Vac Pump Water Sol. Valve	Pre-wired	Junction Box	Screw Term.	
376	Red	Junction Box	Screw Term.	Drain Line Sol. Junct Box	Screw Term.	
377	White	Drain Line Junct Box	Screw Term.	Junction Box	Screw Term.	
378	Blue	Drain Line Sol. Valve	Pre-wired	Drain Line Sol. Junct Box	Screw Term.	
379	Blue	Drain Line Sol. Valve	Pre-wired	Drain Line Junction Box Wire #381 & 377	Screw Term.	
380	Red	Drain Line Junction Box Wires #376 & 378	Screw Term.	Vacuum Pump "C1"	#6 Term.	
381	White	Vacuum Pump "C3"	#6 Term.	Drain Line Junct Box	Screw Term.	
382	W/Blk/Green	Recpt #2-8	Solder	Press. Sw	Solder	
383	Yellow	#2-6 Recpt.	Solder	130° Temp. Sw #1	#6 Term.	
384	Pink	Recpt #2-7	Solder	Fin Vac	Solder	
385	Red	Recpt #2-9	Solder	115° Temp Sw	#6 Term.	
386	W/Green	Recpt #2-11	Solder	Vac Alarm Sw	Solder	
387	W/Tan	TB2-8	#6 Term.	Recpt #1-4	Solder	(1)
387	W/Tan	TB2-14	#6 Term.	Recpt #1-4	Solder	(2)(21)
388	W/Blk/Yellow	Recpt #2-10	Solder	Vac. Alarm Sw	Solder	
389	Violet	Recpt 2-12	Solder	145° Temp. Sw	#6 Term.	
390	Gray	Recpt #2-5	Solder	Press. Sw	Solder	
391	Blue	Gas Solenoid Junction Box	Screw Term.	Junction Box & Wires 363, 371, 392, 366, 377 & 45	Screw Term.	(6) & (7)
392	Blue	Gas Solenoid Junction Box	Screw Term.	Junction Box & Wires 236 & 44	Screw Term.	(6) & (7)
393	Blue	Water Solenoid Junction Box	Screw Term.	Junction Box & Wires 180 & 376	Screw Term.	(6) & (8)
394	Blue	Water Solenoid Junction Box	Screw Term.	Junction Box & Wires 371, 391, 377, 366, 363 & 45	Screw Term.	(6) & (8)
400	Blue	TB3-13	#6 Term.	TB1-Low	#6 Term.	(6)
401	W/Blk	TB3-10	#6 Term.	TB1-High-N.C.	#6 Term.	(6)
402	Black	Thermostat Wire #251	#6 Term.	Heater "D" 92498-001	Solder	
403	White	TB8-6	#6 Term.	Heater "D" 92498-001	Solder	
450	W/Green	TB2-9	#6 Term.	TB4-4	#6 Term.	(22)
550	Yellow	Rotary SW-11	#6 Term.	TB2-18	#6 Term.	(22)

NOTES FOR TABLE 3-1

(1) Wire used on Single door unit.
(2) Wire used on Double door unit.
(3) Wire used on units shipped before 1/71.
(4) Wire used on units shipped before 4/69.
(5) Connect Wire TO/TB2-8 on units shipped after 1/71.
(6) Wire used on units shipped after 4/69.
(7) Wire 22 inches long.
(8) Wire 26 inches long.
(9) Connect Wire FROM/Rotary SW-41 on double-door units shipped after 9/76.
(10) Wire not used on double-door units after 9/76.
(11) Connect Wire FROM/TB2-9 TO/RCPT 1-2 on units shipped after 9/76.
(12) Connect Wire TO/TB3-10 on double-door units shipped after 9/76.
(13) Connect Wire TO/TB2-8 on double-door units shipped after 9/76.
(14) Wire not used on units shipped after 9/76.
(15) Connect Wire FROM/TB2-13 on units shipped after 9/76.
(16) Connect Wire FROM/TB2-6 TO/RCPT 3-2 on units shipped after 9/76.
(17) Wire not used on units shipped after 9/76.
(18) Wire not used on units shipped after 9/76.
(19) Wire not used on units shipped after 9/76.
(20) Wire not used on units shipped after 9/76.
(21) Connect Wire FROM/TB2-9 on units shipped after 9/76.
(22) Wires used on double-door units shipped after 9/76.

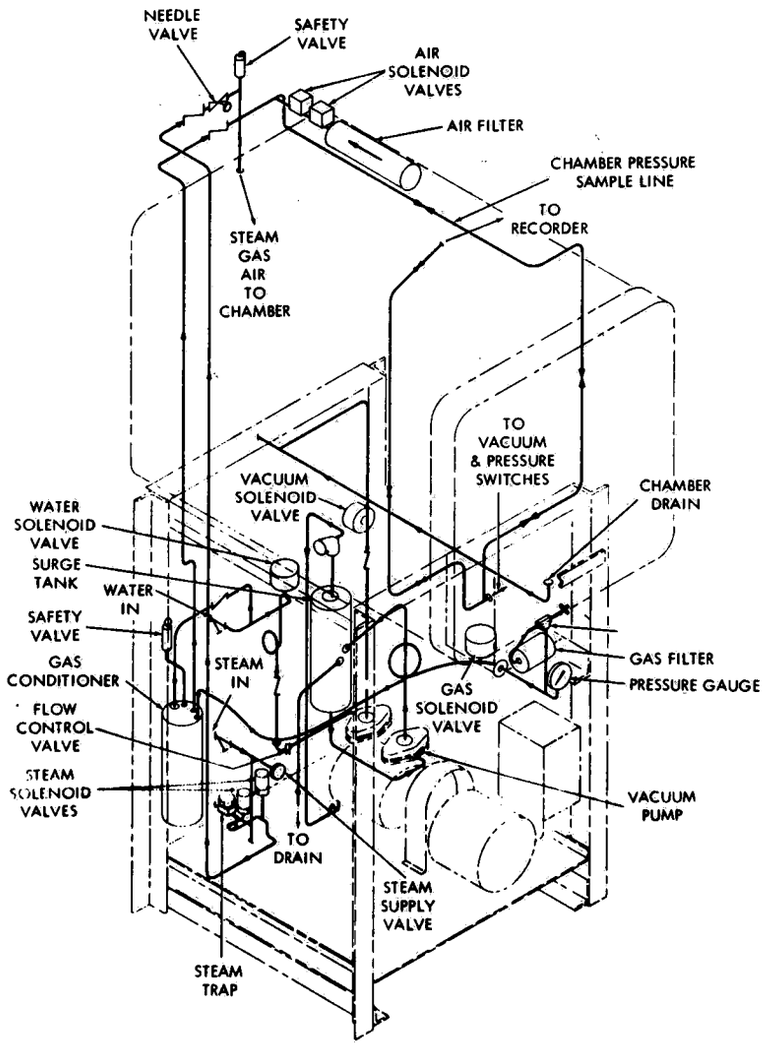


Figure 3-3. PIPING DIAGRAM (Units Shipped Before 8/70).

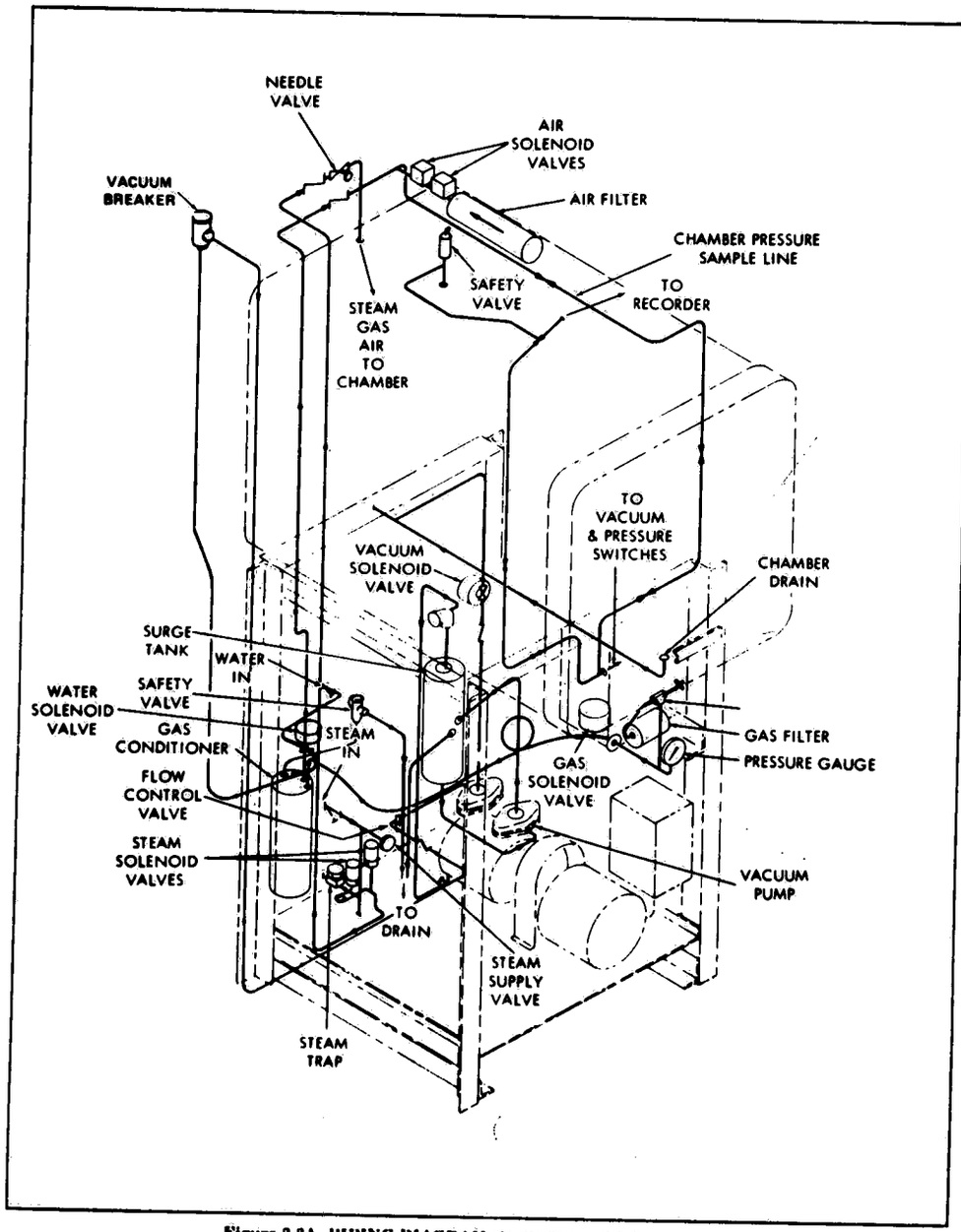


Figure 3-3A. PIPING DIAGRAM (Units Shipped After 8/70).

3-20

REV. 6/78

SECTION 4
MAINTENANCE AND INSPECTIONS

4-1. STERILIZER CHAMBER

Inspect the chamber interior. Be sure the chamber is cool before attempting to clean. Remove all racks, trays, instruments, etc. Clean the strainer of any lint or sediment. Wash chamber interior, using a Calgonite ® (Calgon Corp.) solution.

CAUTION

ABRASIVES, STEEL WOOL, PICKS, SCRAPERS OR SHARP INSTRUMENTS SHOULD NEVER BE USED TO REMOVE FILM OR DEPOSITS. USE ONLY MILD DETERGENTS AND HOT WATER. SOAK HEAVY DEPOSITS TO LOOSEN.

WIPE CHAMBER DRY WITH A SOFT LINT-FREE CLOTH TO REMOVE FILM.

4-2. LOADING CARS AND EQUIPMENT

Wash the loading car, racks and trays in Calgonite solution. Do not use abrasives (see instructions above). Wipe dry with a soft, lint-free cloth. Lubricate all metal to metal bearing surfaces after drying.

4-3. CHAMBER DOOR MECHANISMS

Place a few drops of oil on the hinge pins and work in by opening and closing the door several times. Wipe off excess oil.

Remove old grease completely from door before applying new lubrication. Grease the door mechanism with Jet Lube (Jet-Lube, Inc., Burbank, California) AP-1W (or equivalent), high-temperature, white grease. Jet Lube AP-1W is insoluable in water, insensitive to temperatures from sub-zero to 300 F, and conforms to NLGI No. 2 grade (ASTM 265-295). The blue button at the center of the handwheel on all models can be removed to reveal a grease fitting for this purpose.

4-4. DOOR GASKET

Check the door to make sure it closes easily and centers properly. Adjust if necessary. (See SECTION 6 for instructions on replacing gaskets.)

4-5. AIR FILTER

Clean the air filter and check the condition of the fiberglass discs. Moisture and rust in the filter indicate the need for replacement of the filter cartridge. (See SECTION 6 for replacement of cartridge.)

4-6. GAS FILTER

Inspect gas filter and replace element as required. A new "O" ring should be installed with each filter element change. The time interval will vary depending on the amount of dirt in the gas cylinders. (See SECTION 6 for replacement of filter element.)

NOTE

Dirty cylinders cause problems in malfunctioning of valves and dirt accumulations on product loads.

4-7. VACUUM PUMP

Periodically give grease cup cap a turn to force small amount of grease into bearings. Refill grease cup when necessary with Plastilube EP grease.

Tighten pump shaft packing nut, back it off again until loose, then retighten with wrench until snug. Excessive tightening may affect pump speed or cause overload switches to trip.

Remove old packing and repack when leaks can no longer be stopped by tightening. (See SECTION 6 for replacement of packing.)

4-8. SAFETY VALVES

Operate all safety valves to be sure they are functioning correctly. The valves may be triggered manually or by over-pressure. Replace any defective valves.

4-9. STEAM SUPPLY SYSTEM

Apply steam pressure and inspect lines and valves for leaks or malfunction. Repair or replace valves or piping as required.

4-10. STEAM TRAP, STRAINERS, ETC.

Open trap and strainers and clean out all sediment.

4-11. GAUGES AND INSTRUMENTS

Look for damaged or malfunctioning instruments. Replace or repair where necessary. Replace cracked or broken glass, lamps or buttons.

Clean and fill the recording instrument inking system (see Equipment Manual). If necessary, use the cleaner wire supplied with the recorder to dislodge hardened ink in the pen tip.

REV. 8/75

4-12. ELECTRIC GAS CONDITIONER

At the end of each quarter, remove the 3/8" IPS plug (Figure 7-12a, Index No. 45) from the top of the conditioner and visually check the fluid level. If necessary, add water to restore level to within 1/2" of top. Do not overfill. Date and initial the tag (Part No. 81052-091) attached to the conditioner.

NOTE

The gas conditioner thermostat (Figure 7-22, Index No. 15) is factory set at 180 F. Whenever the sterilizer is operated on an electrical supply below 220 volts, it may be necessary to increase the temperature control setting. It should not, however, be set above 195 F.

NOTE: For Envirogard™ considerations see page 7-71.

SECTION 5
TROUBLE SHOOTING CHART

TROUBLE	PROBABLE CAUSE	REMEDY
1. FUSE LIGHT DOES NOT GLOW WHEN POWER SWITCH IS "ON"	A. Fuse blown	A. Examine fuse and replace if necessary.
	B. No power supply to sterilizer	B. Test input line for power.
	C. Defective power switch	C. Replace switch.
2. NO HEAT IN CHAMBER WITH POWER SWITCH "ON" AND PILOT LIGHT IN FUSE HOLDER GLOWS	A. 208/240 volt electric power off	A. Check 208/240 volt power lines and fuses.
	B. Faulty relays	B. Check and replace if defective.
	C. Temperature switch inoperative	C. Check and replace if necessary.
3. TOO HIGH OR TOO LOW HEAT IN CHAMBER	A. Temperature switch out of adjustment	A. Adjust
	B. Faulty temperature switch	B. Replace
4. CHAMBER OVERHEATS	A. Temperature control switch maladjusted or defective	A. Adjust switch. Should be set so auxiliary heater switch opens at 115°F. and control heater switch opens at 130°F. for normal operation. Replace entire temperature control switch if defective.
	B. Excessively hot gas entering chamber	B. Reduce temperature setting of gas conditioner thermostat (should be 150°F.).
5. NO GAS	A. Gas cylinder and gas supply hand valves not open	A. Check to see if hand valves are open.
	B. Gas solenoid valve not open	B. Make sure 120 volt power is applied to solenoid valve when "CHARGE" pilot light is on. If power is present, replace valve.
	C. Cylinder depleted	C. Replace if cylinder pressure is less than 30 psig.
6. NO AUTOMATIC CYCLING	A. Automatic-Manual switch on "MANUAL", or defective. "READY" light not on or door not securely closed	A. Change to "AUTOMATIC" position. Close door firmly and wait until "READY" light comes on before pressing "START" button.
	B. "START" button had not been depressed	B. Depress "START" button momentarily.
	C. Pulse timer defective or micro-switches not functioning properly	C. Replace timer.

TROUBLE	PROBABLE CAUSE	REMEDY
	D. Selector switch solenoid defective	D. Replace switch and solenoid assembly.
	E. Rectifier defective	E. Replace rectifier.
7. NO VACUUM OR INSUFFICIENT VACUUM	A. Vacuum pump starter defective or tripped	A. Repair or replace. Correct cause of tripping and reset.
	B. Pump motor defective	B. Replace.
	C. Solenoid or check valve defective	C. Replace.
	D. Leak in vacuum system	D. Check for leaking joints or defective door gasket.
8. EXCESSIVE VACUUM	A. Vacuum switch defective or out of adjustment	A. Adjust vacuum switch or replace if defective.
9. VACUUM PUMP NOISY	A. Vacuum line solenoid valve fails to open	A. Check operation of solenoid valve.
	B. Air bleed valve on vacuum pump not open	B. Open air bleed valve exactly 1/4 turn from closed position.
10. SIHI VACUUM PUMP BINDS	A. Unsuitable packing	A. If packing is graphite type (black), replace it with Teflon (white) stuffing box packing (five P-80936-091).
	B. Defective shaft bearings	B. Replace pump.
11. ROTARY SWITCH ADVANCES BEYOND "PREVAC" PHASE WHEN "START" BUTTON IS DEPRESSED	A. Units shipped before 1/71 require wiring change	A. Remove wire 177 from TB2-6 and connect it to TB2-8.
12. FILTERED AIR CYCLE NOT OPERATING	A. Defective air solenoid valves	A. Check for 120 volts at terminals of valves. If voltage is present, replace valves.
	B. Clogged air filter	B. Overhaul air filter.

SECTION 6
COMPONENT ADJUSTMENT, REPLACEMENT AND REPAIR

This section includes instructions for the adjustment, disassembly, repair and replacement of sterilizer components. Exploded views and assembly drawings showing the various parts and assemblies referred to hereinafter are included in SECTION 7 of this manual.

6-1. CHAMBER DOOR ASSEMBLY

Normal maintenance of the chamber door and some repairs to the door mechanism can be accomplished without removing the door from its hinges. For major repair the door should be removed and placed on a clean padded work bench or table.

Removing the Door from the Hinges

(See Figure 7-7)

With the door open and supported, remove the retaining rings (4) and hinge washers (5) from each of the hinge pins (1). Withdraw the pins and slide the door and hinge assembly out of the hinge body (2). Place the door on a clean padded bench with the chamber door handle facing upward. If it is necessary to remove the hinge body (2), remove the four capscrews (3) that fasten it to the door frame.

Disassembly of the Chamber Door

Turn the chamber door handle to retract the chamber door arms. Remove the self tapping screws (27) and lift off the chamber door cover (26). If necessary, replace door cover brackets (40) by removing the self tapping screws (38). Remove any worn speednuts (39) and slip new speednuts over the door cover brackets (40).

Remove the retaining rings (47) and withdraw the door hinge pins (45). Slip the door hinge (46) out of the door hinge bracket (43) from the sterilizer door (37).

Turn the button assembly (6 and 7) counterclockwise until it disengages and may be removed. Remove setscrews (9) and handwheel (8). Remove grease fitting (10). Remove screws (17) and washers (18). Remove handle nut (11), thrust ring assembly (12) and spring (14). Remove drive pin (13) from handle nut (11) and bearing (15) from recess in top socket plate (16). Remove socket head screws (20) and washers (21). Slide the top socket plate (16) forward and withdraw the roll pins (22) and washers (21). Remove the top socket plate (16). Remove the door arms (31 and 32). If necessary, loosen but DO NOT REMOVE THE ARM CLIP LINKS (29) AND STUDS (30). Arm clip studs retain shims (34, 35 and 36) which align the arms to seal the door against the door frame. If the arm clip studs must be removed, use caution to replace the arm clip studs and shims in the same location during reassembly. Remove the bottom socket plate (25). Turn the door over and remove the screws (63) holding door back cover (62) in place. Remove door back cover (62) and the gasket (58). Discard the gasket. Using a socket wrench, remove the screws (57) holding the diaphragm cover (56) in place. Remove the diaphragm cover, the diaphragm (55) and gasket (54). Pull out the thrust plate (53), lock clutch and lock clutch rod spring (50). Break the weld joining the door post (23) and the lock clutch ring (49). Unscrew the door post (23) from the front of the door. Remove the lock clutch ring (49), and the door post nut (48).

Cleaning and Inspection

Clean all working parts with a solvent; remove all gum or grease from bearing and worn surfaces. Wipe all parts dry with a clean lint-free cloth. Inspect all parts for wear, cracks, chipping or other damage. Examine door post key, keyway and threads. Excessive wear may cause the closing mechanism to jam; replace any parts necessary to make handwheel action smooth. Examine diaphragm for breaks or distortion. Replace if necessary. When steam lock diaphragm has been removed always use a new diaphragm gasket when reassembling.

Reassembly

The door should be reassembled in reverse order to disassembly. The following notes and precautions should be observed:

1. The dowel pins (51) should be installed first. Then assemble the door post (23) and lock clutch ring (49), joining them by a tack weld. Be sure the weld is secure before proceeding further.

2. Install the new diaphragm gasket (54) with the graphite face next to the door (37).

3. Lubricate the following parts, using Lubriplate 630AA only.

   a. Lock clutch rod spring (50) and lock clutch rod (52).

   b. Thrust plate (53) on the pin and the face toward the clutch rod (52).

   c. Thrust ring assembly (12).

   d. Key (19), keyway and threads in door post (23).

   e. Threads of handle nut (11).

4. Pack the bearing (15).

5. Tighten all screws and threaded fasteners firmly.

6. Press thrust ring assembly (12) and thrust bearing (15) well down into groove in handle nut (11). Press the subassembly into the top socket plate (16) so that the screw holes are properly aligned. Install screws (17) and lockwashers (18) to draw thrust ring assembly into proper position before proceeding further with assembly.

7. When servicing a door having an old-style diaphragm (P-7230-61) (55), replace the diaphragm if a new-style 7/8-inch long spring (P-12267-001)(50) is being installed. A new-style diaphragm (P-7230-61) (55) may be used with the old-style 1-inch long spring (P-12267-61) (50) if the lower operating pressure is not required. Do not use an old-style diaphragm with a new-style spring.

NOTE: The new-style diaphragm has the letter "N" stamped on its rim, the old-style does not.

8. Before installing new gasket (58), clean gasket groove in door (37). Gasket is cut to fit snugly and must be forced in. Push in a short section at a time. Do not stretch the gasket. If gasket seems too long, DO NOT CUT IT; remove it and start over, compressing short sections as they are inserted in the groove so as to take up full length. When the gasket has been installed, coat the gasket seating surface of the end ring with a spray to prevent gasket from sticking. Use silicone spray (P-40348-091) for doors using neoprene gaskets; fluorocarbon spray (P-752870-091) for doors using silicone gaskets.

9. When reassembly is complete, wipe the door carefully with a clean cloth, removing any excess grease.

Reassembly of Hinge Parts to Door

The hinge should be reassembled to the door in reverse order of disassembly.

Reassembly of Door and Hinge to Sterilizer

Set door into place with door hinge (46) between ears of hinge body (2). Position and secure hinge pins (1) with washers (5) and retaining rings (4). Adjust door by turning the door adjusting screw (11) against the door adjusting plate (12) until door is centered properly.

Door Switch And Tightening Torque

Chamber door must be closed and tightened to specified torque (Table 6-1) for door to withstand maximum pressure in chamber. Door switch permits sterilizer operation when door is closed. When performing any maintenance work on chamber, perform the following procedure:

WARNING: DISCONNECT FACILITY POWER TO STERILIZER BEFORE MAKING ADJUSTMENTS.

1. Connect ohmmeter between common and normally-open contacts on door switch.
2. Remove center disc on door handle.
3. Using a torque wrench on lock clutch rod, close and lock door by applying appropriate torque (see Table 6-1).

TABLE 6-1. TIGHTENING TORQUE

Sterilizer Size	Maximum Torque
16x16x26	20 foot-pounds
20x20x36	24 foot-pounds

4. Turn door switch adjusting screw clockwise until switch is activated as indicated by continuity on meter (meter reading of zero).

NOTE: Clockwise rotation should be sufficient to consistently actuate switch when normal operator pressure is used.

5. Open door. Close and tighten door by applying specified torque.
6. Assure switch activates before maximum torque is reached. If not, repeat step 4.
7. Open door and replace center disc.
8. With switch adjusting screw properly set and door closed and tightened with specified amount of torque, start a cycle.

NOTE: Do not disturb handwheel until leak test in step 6 is completed.

9. Using a leak detector, check around door gasket for gas leaks.

If door does not seal,

a. determine if chamber door has to be adjusted.
b. determine if door gasket has to be replaced because it is cracked or worn.

10. To be sure that chamber has been exhausted, do not open the chamber door until after the "end-of-cycle" buzzer stops.

Shimming Procedure

This procedure is mandatory when servicing door on sterilizers, starting with Serial No. 0869001S and is recommended for units of previous manufacture when door servicing is required. In the event a door is reverse hinged for opposite-hand opening or adjustment is made due to gasket leak, etc., perform the following to assure proper door fit.

1. Close and tighten the door to compress gasket into position.

2. Back off door wheel until holding arms are slightly loose, then tighten to approximately 2-pounds torque. All door arms should now be tight.

3. If any arm is loose, determine the shim thickness required to raise it so as to match the tightness of the other arms.

4. Open the door and install shims where required.

5. Close and tighten door to approximately 2-pounds torque. All arms should now be equally tight. If necessary, repeat steps 3 and 4.

6. Open the door and add 0.010-inch thick shim (P-39911-091 for 16-inch doors; P-40023-091 for 20-inch doors) under each corner arm.

7. Close the door slowly, checking to ensure that the corner arms engage and tighten before any other arms. If necessary, repeat step 6, using an additional 0.005-inch thick shim (P-39910-091 for 16-inch doors; P-40022-091 for 20-inch doors). The total thickness of shims applied in steps 6 and 7 must not exceed 0.015-inch.

20x20 Sterilizers

The 20x20 sterilizer chamber door has been redesigned. Units shipped after December, 1976 include the "new-style" door. The "new-style" door is identified by the absence of 3/16-inch diameter holes at the 6, 8, 10 and 12 o'clock positions on the chamber door cover.

When it becomes necessary to replace an "old-style" door, order and install kit Q-759581-001. Refer to Figure 7-7 when disassembling the door, discard "old-style" items 30, 33, 37, 40, 43 and 44. These items are replaced by the "new-style" parts (listed below "old-style" part for each item).

The "old-style" chamber door cover (with nine 3/16-inch diameter holes) is interchangeable with the "new-style" cover (with five holes). However, five of the original nine speednuts (39, Fig. 7-7) and self-tapping screws (27, Fig. 7-7) are needed to install the kit. The remaining four speednuts and screws can be used to fill the extra 3/16-inch diameter holes in the "old-style" chamber door cover.

6-2. VACUUM PUMP

Refer to Figures 7-13 and 7-14.

The SIHI Liquid Ring Air Pump (1) is a Rotary Cellular Pump with partial admission in which the rotating fluid absorbs the motor power imparted to the impeller and performs the required work of compression. By running the impeller in a casing partly filled with water, a water-ring is formed which rotates in the casing. Due to the special construction of the casing, the water is forced in and out of the impeller cells somewhat like a piston, thus creating pressure, or respectively a vacuum.

During operation, the pump must be continuously supplied with new water to discharge the heat generated by compression and to replace losses due to the water being discharged with air.

The direction of rotation and the direction of air flow are indicated by arrows cast on the pump casing.

To prevent noisy operation of the pump, an air bleed line is connected from the bottom of the pump (facing to the rear of the unit) to the surge tank air discharge pipe. This places the end of the bleed line above the pump water level so water will not run out of the pump while it is stationary. The air bleed valve (29, Figure 7-13) is adjusted at the factory and requires no further attention.

Pump Packing (See Figure 6-2).

Packing gland nuts (2), which are too tight, may bind up the pump. The gland nuts should be just snug enough to prevent excessive leakage. A small loss of water through the nuts will not materially affect operation of the vacuum pump. If leakage does become excessive, the gland nut should be tightened slightly.

If after a considerable period of operation, the gland nut has been so frequently tightened that the spacer (3) comes up against the casing (1), it will be necessary to repack the stuffing box. Proceed as follows:

Loosen the gland nut and draw back both the nut and spacer as far as possible to provide room for inserting new packing strips. Open the new packing ring (4) to form a helix so it can be pushed over the shaft. When the ring is in place, tighten the gland nut with a spanner wrench (provided with the machine) to insure that the new ring is expanded to completely fill the space between the shaft and the bore of the stuffing box. The gland nut should then be loosened and slightly tightened by hand.

If the addition of a new packing ring does not provide a sufficiently tight stuffing box, replace all of the packing rings. Thoroughly clean the stuffing box space. Fit the packing as shown in Figure 6-1, using care to see that the joints are staggered.

If the stuffing box becomes heated, stop the pump, slacken the gland nut and retighten by hand.

Cleaning

Cleaning the pump is recommended only when positive indications point to a clogged pump. Proceed as follows:

1. Break the piping from the union nut (56, Figure 7-11) down to the check valve (45, Figure 7-11).
2. Disconnect the tube from the air bleed shut-off valve (29, Figure 7-13) and drain water to this level; then reconnect the tube and close valve.
3. Pour 1 pint of Sanipro H into the opening in the check valve and fill with 2 pints of water. Rotate pump three turns by hand. Allow solution to stand in pump for 1/2 hour.
4. Drain pump by operating electrically for 1 minute. Repeat steps (2), (3) and (4).
5. Fill the pump with 1-1/2 quarts of a 5-percent solution of baking soda (about 8 level teaspoons of sodium bicarbonate in 1 quart of water). Rotate pump three turns by hand.
6. Allow this solution to stand for 10 minutes.
7. Reconnect piping. Refer to Step (1).
8. Operate the pump on the post-vac phase to assure thorough rinsing. With the pump running, recheck adjustment of the air bleed valve (1/4 turn open).

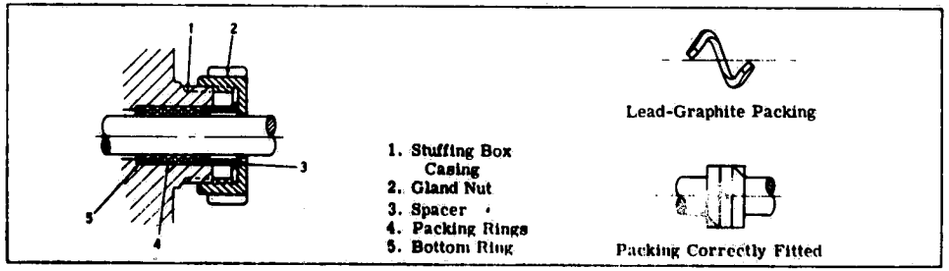


Figure 6-2. VACUUM PUMP STUFFING BOX.

6-3. PUMP AND MOTOR COUPLING

Refer to Figure 7-13 (Motor and Pump Assembly).

A new jaw coupling design (6), with the load transmitted through a coupling cushion, connects the motor and pump. This coupling normally will not require replacement. The shafts of the motor and pump have been aligned at the factory to be angular and parallel to within 0.015 inch with the use of groove pins and shims.

To remove the cushion, use any bladed object (e.g. screwdriver, straight edge, etc.) to pry up the notched end of the snap ring. Work the entire ring out of the cushion groove. Remove the load cushion by unwrapping it and inspect for damage.

NOTE

The motor and pump need not be disturbed.

To reset the cushion, reverse the steps above. If re-alignment is necessary, use a metal straight edge as shown. No other tools are required.

6-4. MOTOR

Refer to Figure 7-13 (Motor and Pump Assembly).

The electric motor (8) is a 220 volt, 3 phase, 60 cycle machine used in conjunction with a magnetic starter (9) to which overload heaters (10) have been added. When motor troubles occur, replace the motor and return the old motor for repairs. Overload heaters may be replaced individually when ruptured.

6-5. ADJUSTMENT OF NEEDLE VALVE AND THERMOSTAT FOR CONDITIONING STEAM

Refer to Figure 7-13.

Before placing the sterilizer into service, and quarterly thereafter, the needle valve and vacuum line thermostat adjustments must be checked as follows:

1. Set air bleed valve (29) on vacuum pump ¼ turn open and tighten valve stem packing so that the stem cannot vibrate to a different position.
2. Set the "Auto-Manual" switch to the "Auto" position.
3. Turn power switch to "ON". Wait for chamber temperature to stabilize in the 130 ± 5 F range. Connect absolute pressure gauge to chamber.
4. Close door and press start button. The phase indicator will advance to the first "Vac" position automatically. In the first "Vac" position the vacuum pump will evacuate the chamber to 20'' Hg, then advance automatically to the "Condition" phase.
5. Turn the set screw marked "Drain Line Temp" on "Vac Line Temp Sw." (Figure 6-6) two turns counterclockwise.
6. Adjust the needle valve (5) by first turning it to a fully closed position and wait until chamber pressure is less than 90 mm Hg absolute. Then slowly open needle valve until absolute pressure gauge stabilizes at 90-100 mm.
7. Turn the adjustment screw marked "Drain Line Temp" or "Vac, Line Temp. Sw." clockwise to adjust for a chamber pressure of 70-80 mm. If the chamber pressure range is more or less than 10 mm, adjust so that the mid point of the range is at 75 mm.

NOTE: Factory specifications require steam to be supplied to the sterilizer at a pressure between 50 and 80 psig while sterilizer is in operation. The above adjustments may be difficult to make if steam pressure drops below 50 psig at any time.

6-6. GAS SUPPLY FILTER ASSEMBLY

Refer to Figure 7-15.

The gas supply filter is used to eliminate malfunctioning of valves and trouble with dirt accumulation on product loads due to dirty gas cylinders. If the filter resistance to flow increases to where charging time is excessive, replace the filter element.

Replacement of Filter Element

WARNING

DO NOT REMOVE SNAP RING UNTIL IT IS CERTAIN THAT ALL GAS PRESSURE HAS BEEN BLED OUT OF THE FILTER.

Remove the snap ring (1) from the end of the assembly. Insert a #10-32 screw in the tapped hole in the cover plate (2) and slide it out of the filter body (5). Remove the filter element (4). Remove the "O" ring (3) from the body. Reassemble in reverse order.

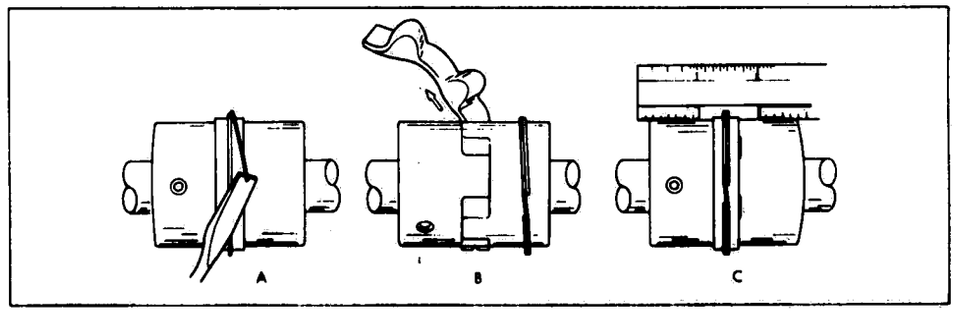


Figure 6-3. REPLACEMENT OF COUPLING CUSHION.

NOTE

A new "O" ring should be installed with each filter element change.

6-7. AIR FILTER ASSEMBLY

Refer to Figure 7-16.

The purpose of the bacteria retentive air filter assembly is to provide filtered air to the chamber. Overhaul is necessary when loss of vacuum is slow in the "AIR" portion of the cycle. Proceed by removing the two solenoid valves (24, Figure 7-10). Release the filter support bracket (26, Figure 7-10) and unscrew the air filter.

Disassembly

Remove the four screws (2) that secure the head (11) to the tube assembly (1). Remove the head. Remove and discard the "O" ring (10). Slide the cartridge assembly (3) out and discard. Some parts of the filter cartridge assembly may be salvaged; however, for best results the entire cartridge assembly (3) should be replaced. Reassemble in reverse order, using new "O" ring.

6-8. STEAM SUPPLY ANGLE VALVE

Refer to Figure 7-17 (Union Angle Valve).

Disassembly

Remove the packing nut (3) and packing gland (4). Remove bonnet nut (6). Place handwheel nut (1) loosely on stem and turn to back stem out of threads. Remove stem (8), bonnet (7) and packing (5). Remove the disc nut (12) from disc holder assembly.

Inspection and Replacement

While the valve seat (13) is still in the body (14) inspect for scratches, nicks or excessive wear. If the seat is damaged, remove and replace. Clean and inspect the valve parts. Examine stem, disc holder and seating. Replace packing (3) and Teflon (E.J. Dupont de Nemours & Co.) disc (11) at each disassembly; replace all worn or damaged parts as required.

Reassembly

Reassemble the valve in the reverse order of disassembly. Tighten the disc nut (12) securely and peen over to lock in place. Make sure the disc holder assembly swivels freely on the end of the stem. Install new packing, forcing it into place with the packing gland. Tighten the bonnet nut enough to prevent leakage. Do not tighten the packing nut excessively or the valve will be difficult to operate.

6-9. STEAM TRAP

The SARCO steam trap (10, Figure 7-12) is used to eliminate condensate and air in the steam line. It consists of only three parts; the body, cap and stainless steel disc, which is the only moving part. The trap uses the kinetic energy of steam to close the valve.

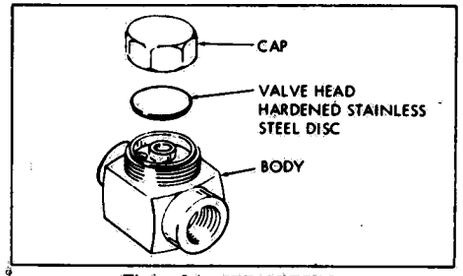


Figure 6-4. STEAM TRAP.

To clean or replace the disc, unscrew the cap. When replacing the disc, make sure that the smooth side is facing up. NEVER use rough abrasives on this disc.

NOTE

Keep the strainer (22, Figure 7-12) clean by removing the blow-off plug and blowing down or by removing and washing the screen.

6-10. SOLENOID VALVES

A solenoid valve is an electrically-operated valve in which an energizing coil acts on a movable plunger (electromagnetic principle) to control fluid and gas flow. Various makes of valves are used in the sterilizer piping to control gas, water, steam and filtered air flow.

After long use, a solenoid valve may become noisy and erratic in operation. This may be due to a defective coil or worn valve seat. To test a suspected solenoid, measure the AC voltage at the coil terminals. If approximately 120 volts is measured, the action of the valve should be positive. If the valve hums loudly and is sluggish, the coil is probably defective. A worn valve seat will cause a valve to leak when closed.

To keep sterilizer down time" to a minimum, it is recommended that all solenoid valves be replaced without repair if they become defective.

Installation

When installing new valves in the steam, water and gas lines, note the arrow stamped on the valve body, or the words "In" and "Out" stamped at the inlet and outlet ports. A reversed valve cannot operate properly.

VALCOR valves marked with "C" for the inlet and "A" for the outlet are currently being used in the filtered air piping. These valves will stop pressure flow from the inlet side only. In order to hold against vacuum in one direction and pressure in the opposite direction, these valves must be mounted with outlets marked "A" together (facing each other). See figure 6-5.

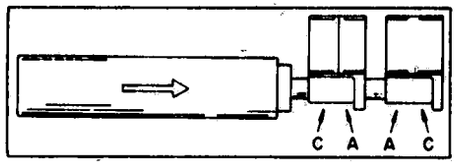


Figure 6-5. ASSEMBLY OF FILTERED AIR SOLENOID VALVES.

Modification Of Gas Conditioner Line When Installing ASCO Solenoid Valve

The Jackes-Evans valve, P-37627-091, (item 48, Figure 7-11, 7-11A or 7-11B) in gas conditioner line cannot function at low flow rates because it is pilot operated. A new solenoid valve, P-160841-001, is available. This ASCO valve can function at low flow rates because it is operated directly. When the old valve has to be replaced, order valve conversion kit, P-764112-001. Remove old valve (48), nipple (49) and elbow (50) above valve and nipple (47) below valve. Install kit as shown in insert on Figure 7-11, 7-11A or 7-11B.

NOTE: Units shipped after September, 1976 have ASCO solenoid valve in gas conditioner line.

6-11. SAFETY VALVES

All Cryotherm sterilizers employ two safety valves to protect personnel and equipment. The chamber safety valve (14, Figure 7-10) is set to re-release at 33 psig and the gas conditioner safety valve (4, Figure 7-12) at 150 psig. Their operation is important.

Test both valves periodically by pulling the ring to release the pressure and allow the valves to reseat. If there is any reason to suspect them defective, replace the valves. DO NOT attempt to clean or repair.

6-12. RECORDER

The recorder consists of a chart driven by an electric clock mechanism and two marking pens coupled to pressure and temperature sensing devices. The blue pen (blue ink) records pressure in pounds per square inch (psi) and vacuum in inches of mercury (in. Hg). The red pen (red ink) records chamber temperature in degrees Fahrenheit (°F.).

The thermometer system consists of a helical pressure element connected by a capillary tube to a metal bulb located in the sterilizer chamber. The bulb, tubing and pressure element are filled with a fluid approved by the Scientific Instrument Makers Association and form a sealed system. This system must never be broken; even the most minute leak will make it inoperative. The system is activated by changes in the temperature at the bulb. These changes are transmitted by the tubing to the pressure element, causing it to coil or uncoil, thus moving the recording pen or pointer.

The helical pressure element in the vacuum-pressure system reacts directly to changes in chamber pressure, causing the element to coil for negative pressures (vacuum) and uncoil for positive pressures.

Servicing

Servicing of the recorder in the field should be limited to the replacement of the timer motor if it is defective. Seriously defective instruments should be removed and replaced.

Removal and Replacement

Disconnect power to the sterilizer at the hospital's main panel.

To remove the recorder, disconnect all wiring at the terminal block inside the recorder case, disconnect the sample line at the compression fitting at the rear of the case and remove the temperature bulb from the chamber. Roll the bulb and tube into an eight inch roll and tape to the recorder case. Use care and do not damage the bulb or tube. Remove the two screws which hold the recorder to the brackets at the back of the control panel and slide the unit out of the panel to the front.

Handle all recorders, new or old, with care. Do not twist, kink or strain the tubing. Do not bend it sharply. Never cut the tubing or disconnect it from the bulb. Never carry or support the instrument by the tubing. Be careful of finishes and glass when packing or unpacking.

To install a recorder, locate it in the space provided and secure to the panel with the mounting screws provided. Connect the sample line to the back of the case. Check the wiring diagram fur-

nished and make all necessary connections to the terminal block at the back of the case. Uncoil the tubing and straighten without twisting or bending.

Do not bend the tube at less than 3" radius. The tubing must be protected from crushing, abrasion, strain or movement at all times. For support it may be tied or taped to unheated pipes or frame members. It is relatively unaffected by surrounding temperatures. Coil excess tubing in an 8" coil and tape out of the way. Do not cut off any excess. Insert the sensing bulb in the bulb support located inside the chamber (upper left).

6-13. LEAF SWITCHES ("START", "STOP" AND "OVER TEMP RESET" BUTTONS)

Refer to Figure 7-19 (Control Assembly)

The "START" and "STOP" buttons (leaf switches (17) are used to initiate the cycle (start the phase indicator switch) or stop the cycle (final "AIR" to "OFF" position) respectively. The "OVER TEMP RESET" button (leaf switch) returns the circuit to proper operating mode after the chamber temperature returns to normal.

If these leaf switches do not make proper contact, they may be bent with a leaf adjusting tool. However, if switch is defective, it must be replaced.

Replacement

Disconnect electrical service to sterilizer. Open top control panel by removing screw (10) on top edge of panel. Remove four screws (14) from brackets securing receptacle assembly panel. Pull receptacle assembly panel forward and to one side to expose leaf switches. Unsolder wires and remove two screws (19) securing switch.

Reassemble in reverse order.

6-14. TEMPERATURE SWITCHES

Chamber Drain Line

See Figure 7-22 (Temperature-Pressure Switch Assembly)

The chamber Drain Line Temperature or Vacuum Line Temperature Switch (15) is used to control the amount of steam admitted to the chamber during the conditioning phase by opening and closing the steam solenoid valve. If this temperature switch does not operate properly, it must be replaced.

Replacement

Disconnect electrical service to sterilizer. Remove bulb from chamber drain line and cover (20) from temperature-pressure switch box. Disconnect wires from switch. Remove two screws (2) securing switch and remove switch. Reassemble in reverse order.

Chamber Temperature

See Figure 7-22 (Temperature-Pressure Switch Assembly)

The Chamber Temperature Switches (19) are used to maintain the proper chamber temperature throughout the entire cycle by controlling the strip heater. If these switches do not operate properly, they must be replaced.

Replacement

Disconnect electrical service to sterilizer. Remove the chamber temperature switch bulb from the inside top right hand side of the chamber and cover (20) from the temperature pressure switch box. Disconnect wires from switch. Remove four screws (4) securing switch and remove switch. Reassemble in reverse order.

Adjustment Procedure For Five-Switch Temperature Control (Units Shipped Before 4/69)

The Temperature Control (P-89002-91) (19 Figure 7-22), is adjusted at the factory but should be checked at installation. Proceed as follows:

1. Connect a thermocouple to the Temperature Control bulb with tape, so that the thermocouple is in metal-to-metal contact with the bulb. Bring the thermocouple lead out through the door opening. Close the door but do not lock it. Connect the thermocouple to a potentiometer. Carefully calibrate the potentiometer so there will be no error in the reading.

NOTE: The recording thermometer cannot be used as a reference for adjusting the Temperature Control. The recorder has a relatively slow response to temperature changes which causes it to lag the actual chamber temperature when the temperature rises or falls.

2. Turn the Power Switch "ON".

3. Strip heaters will turn on and the chamber temperature will begin to rise.

4. Adjust Switch No. 2 (Switches are numbered 1 thru 5 as shown in Figure 6-6A or B) to turn Strip Heaters "A" & "B" off when the potentiometer indicates 115 F. Observe heater relay to see when heaters turn off.

5. Adjust Switch No. 3 to bring "READY" light on when potentiometer indicates 125 F.

6. When the potentiometer indicates 130 F, adjust Switch No. 4 to turn Strip Heater "C" off.

7. When Strip Heater "C" shuts off, it will be necessary to manually hold the heater relays closed to overheat the chamber.

8. When the potentiometer reads 135 F, adjust Switch No. 5 to turn "READY" light off.

9. When the potentiometer reads 145 F, adjust Switch No. 1 to turn "OVERTEMPERATURE" light on.

10. Repeat the entire procedure and check the setting of each switch, readjusting slightly whenever necessary.

NOTE: Although the adjusting screws are provided with screwdriver slots, a finer adjustment can be made with a ⅜" socket wrench or nut driver. When using a screwdriver there is a tendency to press in on the adjustment screw, causing the switches to actuate prematurely.

Adjustment Procedure For Three-switch Temperature Control (Units Shipped After 4/69)

The three-switch temperature control may be adjusted (when required) as follows: (Adjustment should be made while heating chamber from room temperature.)

1. Remove power box cover so that operation of relays HR-1 and HR-3 can be observed (Figure 7-23).

WARNING: HIGH VOLTAGE IS PRESENT IN THE POWER BOX. TAKE AND OBSERVE THE PROPER SAFETY PRECAUTIONS TO AVOID CONTACT.

2. Tape a thermocouple to the temperature control bulb. Thermocouple must be in metal-to-metal contact with bulb. Bring thermocouple lead out through door opening, close door but do not lock.

3. Connect the thermocouple lead to a potentiometer. Carefully calibrate potentiometer so that there will be no reading error.

NOTE: The recording thermometer cannot be used as a reference for adjusting the temperature control. The recorder has a relatively slow response to temperature changes, which causes it to lag the actual chamber temperature when the temperature rises or falls.

4. Turn the power switch to ON. (Heater relays and strip heaters are energized and chamber temperature begins to rise.)

5. When the potentiometer indicates 115 F (46 C), strip heaters "A" and "B" should turn OFF (HR-1 is deenergized). If necessary adjust the No. 2 switch (Figure 6-6C) so that HR-1 is deenergized at 115 F.

6. When the potentiometer indicates 130 F (54 C), strip heater "C" should turn OFF (HR-3 is deenergized). If necessary adjust the No. 3 switch (Figure 6-6C) so that HR-3 is deenergized at 130 F.

7. Manually close HR-1 and HR-3 contacts to cause the chamber to overheat.

8. When the potentiometer indicates 145 F (63 C), the OVERTEMPERATURE light should turn ON. If necessary adjust the No. 1 switch (Figure 6-6C) so that the OVERTEMPERATURE light turns ON at 145 F.

9. Repeat the entire procedure and check each switch setting, make minor readjustments if necessary.

6-15. EXPOSURE TIMER

Refer to Figure 7-26 (Timer Assemblies).

The exposure timer (4) is used to time the gas sterilizing phase for any period of time up to six hours. If this timer malfunctions, it must be replaced.

Replacement

Disconnect electrical service to sterilizer. Open top control panel by removing screws (10, Figure 7-19) on top edge of panel. Remove three hex head screws (6) securing timer mounting and pull timer forward. Disconnect wires from timer. Reassemble timer into panel in reverse order.

Automatic reset timer 96909-091 (item 4, Figure 7-26) is purchased from two manufacturers.

1. When replacing a Cramer timer with a Bristol-Saybrook timer, use the two wires supplied with the timer.

Remove pink wire #169 between delay timer TB5-4 and exposure timer switch T_1 N.O. Install **red** lead between these two points.

Using **black** lead, increase length of the following two wires by cutting and splicing parts of black lead: pink wire #170 to timer switch T_1 N.O. and white/black/green wire #174 to timer switch T_1 Common.

2. When replacing a Bristol-Saybrook timer with a Cramer timer, wire changes are not required.

6-16. DELAY TIMER

Refer to Figure 7-26 (Timer Assemblies).

The delay timer (3) is used to control the length of time the conditioning steam is passed into the chamber. If this delay timer malfunctions, it must be replaced.

Replacement

Disconnect electrical service to sterilizer. Remove cover (24, Figure 7-19) behind timer. Disconnect wires from timer and remove timer. Reassemble in reverse order.

6-17. LOW GAS INDICATOR AND CUTOFF (Units Shipped After 1/67)

This device is contained in a square metal box which is mounted next to the electrical junction box on the left-hand side of the stand. It consists of a pressure switch, a pulse timer and a relay (see Figure 7-34). The pressure switch senses cylinder pressure. When cylinder pressure drops to 30 psig, the pressure switch actuates and breaks the signal to the gas charge and steam injection valves. At the same time, it energizes the relay which disconnects the "Charge" light from its regular signal and connects it to the output of the pulsing timer.

The low gas pressure switch is adjusted at the factory; however, it should be checked when the Cryotherm is installed. Proceed as follows:

1. Start a cycle and wait until the phase indicator reaches the "Sterilize" position. The "Charge" light should come on and glow steadily. Remove the cover from the box.

2. Close the gas shutoff valve slowly while observing gas cylinder pressure on the gauge. If the "Charge" light begins to flash off and on when pressure is above 30 psig, turn the pressure switch adjusting screw clockwise until the "Charge" light again glows steadily.

When pressure has dropped to 30 psig, turn the pressure switch adjustment counterclockwise until the switch actuates; then fully close the gas supply valve to simulate an empty cylinder. The "Charge" light will flash on and off to indicate that the cylinder is empty.

NOTE: The pressure switch differential is approximately 15 to 20 psig. Therefore, when it actuates on falling pressure at 30 psig, the pressure must be raised to 15 or 50 psig before it de-actuates. This pressure switch was chosen for this characteristic to prevent "hunting" (i.e., intermittent opening and closing of the gas and steam injection valves due to pressure buildup in the gas line after the gas charging valve closes).

3. Open the gas shutoff valve. When the pressure on the gas gauge reaches 45 to 50 psig, gas will flow into the chamber and the "Charge" light will glow steadily. Close the gas shutoff valve and observe the pressure at which cutoff occurs. Repeat the adjusting procedure if necessary until cutoff occurs at 30 psig ±5 psig.

6-18. MARSH ANGLE VALVE AND HANDWHEEL ADAPTER

"New" Angle Valve and "new" Handwheel Adapter (with #10-24, UNC thread) are on Sterilizers shipped after October, 1975.

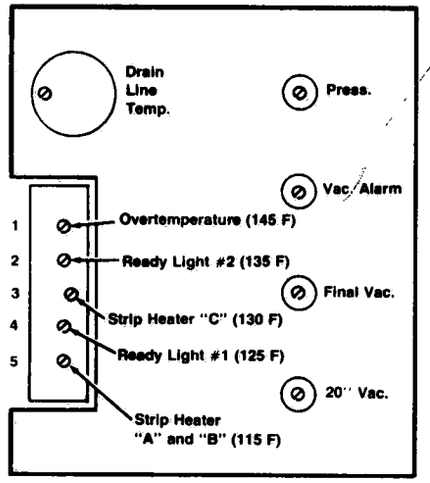
1. Follow the applicable procedure when replacing adapter and/or valve:

a. The "old" 1/4-20 UNC threaded Adapter P-89150-043 is to be used with "old" Valve P-42091-061.

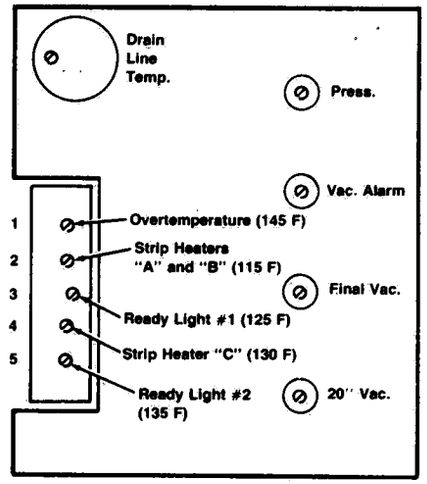
b. Replace "old" Angle Valve with "new" Angle Valve P-150087-001 and the "new" Adapter P-150015-001.

c. Replace "new" Adapter with "new" Adapter P-150015-001.

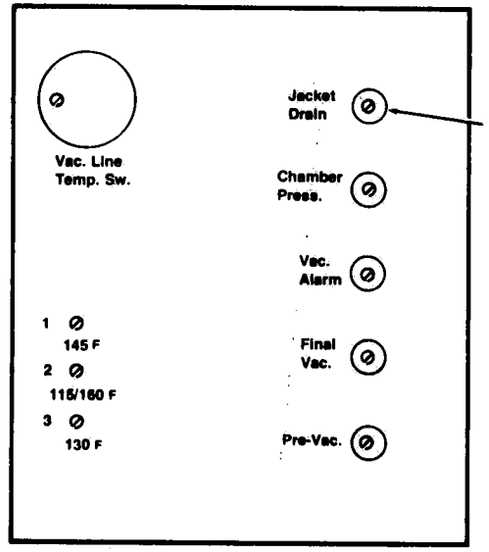
d. Replace "new" Angle Valve with "new" Angle Valve P-150087-001.



A. WITH FIVE-SWITCH TEMPERATURE CONTROL (Units Shipped Before 3/67).



B. WITH FIVE-SWITCH TEMPERATURE CONTROL (Units Shipped Between 3/67 and 4/69).



NOTE: Jacket drain switch is not applicable for Cryotherm sterilizers.

C. WITH THREE-SWITCH TEMPERATURE CONTROL (Units Shipped After 4/69).

Figure 6-6. LOCATION OF ADJUSTING SCREWS.

THIS PAGE
INTENTIONALLY LEFT
BLANK

SECTION 7
PARTS LIST AND EXPLODED VIEWS

Assemblies and components of Cryotherm sterilizers are illustrated and identified on the following pages. The part number, the material suffix, the description and the quantity required for each usage is given. Subassembly components are indicated by indentation. A double indentation indicates a sub-subassembly application. The UNITS PER ASSEMBLY column specific to a given assembly, subassembly is indicated by an asterisk.

For convenience in locating and identifying parts, an index of part numbers has been provided at the back of the book, giving the FIGURE and INDEX NUMBER where specific components are illustrated.

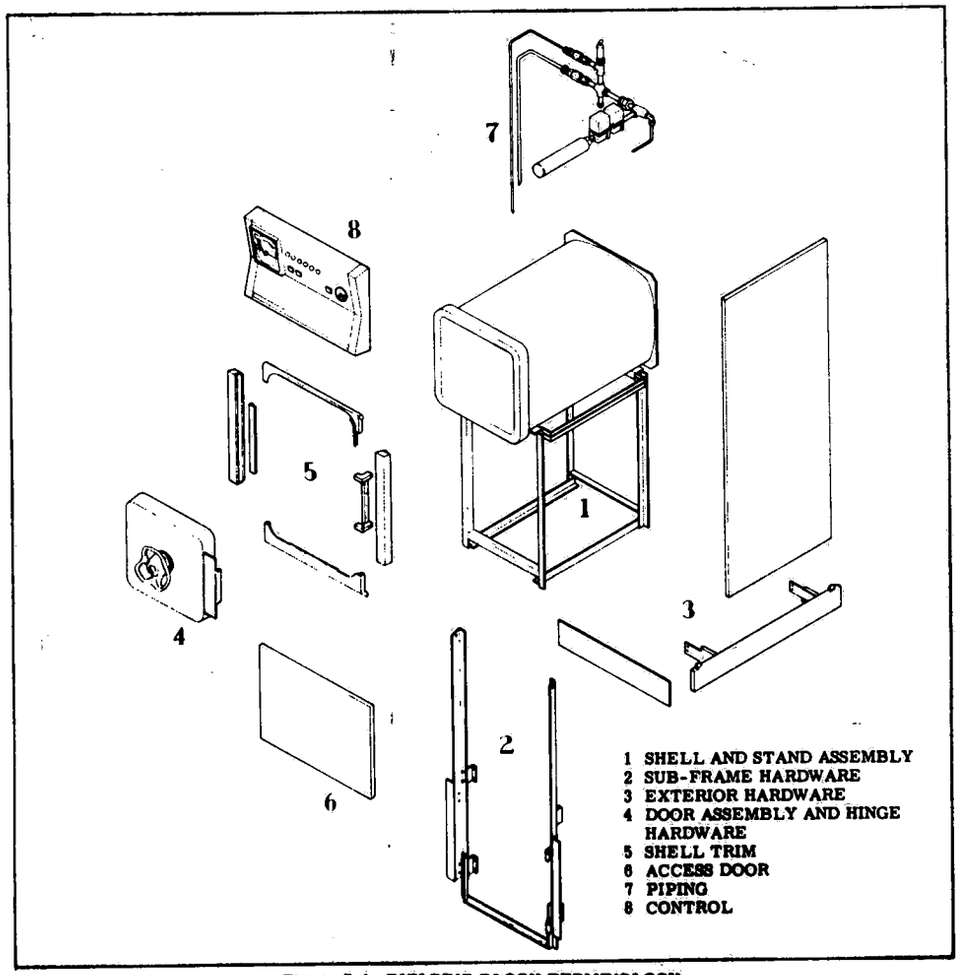


Figure 7-1. BUILDING BLOCK TERMINOLOGY.

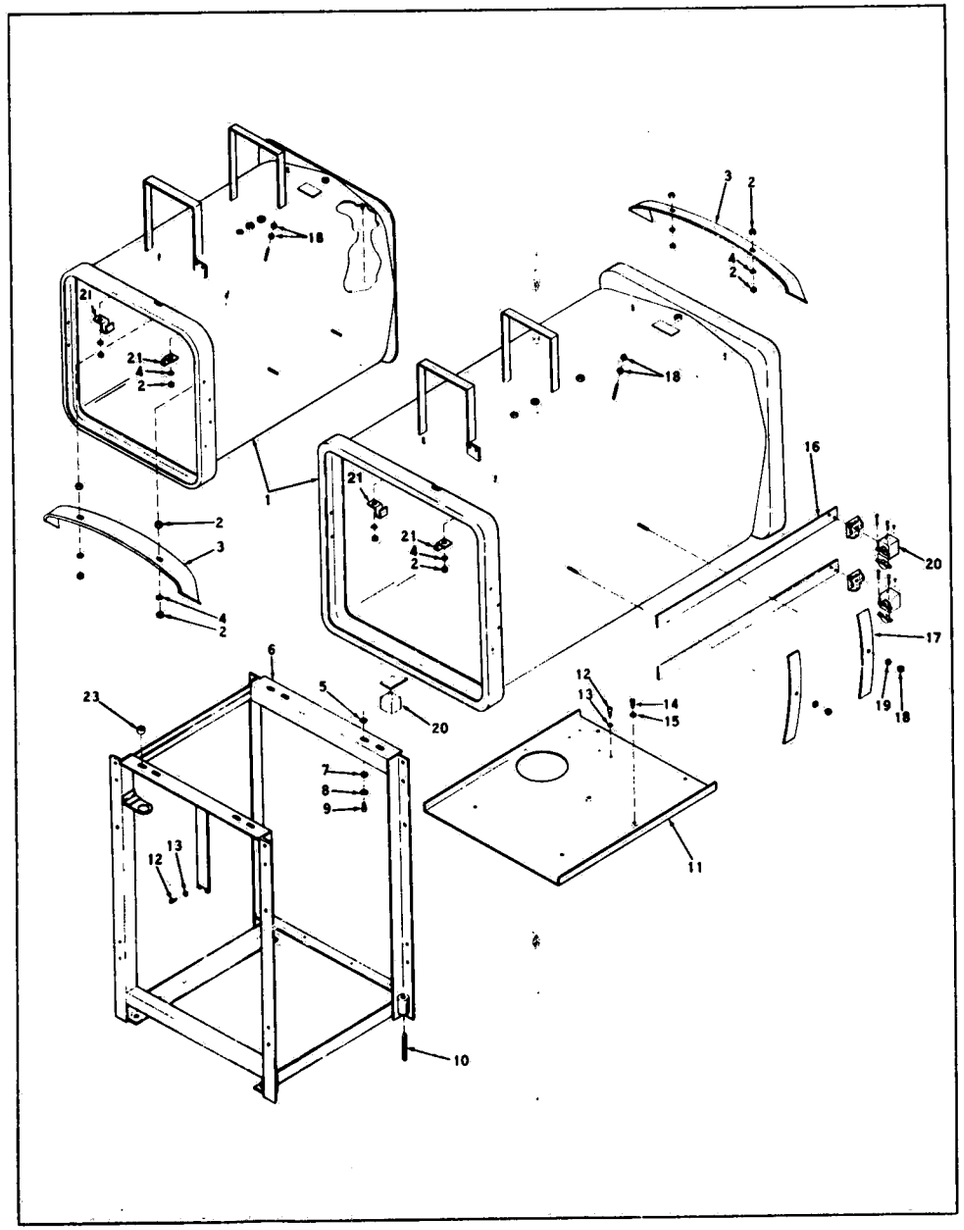


Figure 7-2. SHELL AND STAND ASSEMBLY.

FIG.& INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-2-	P	149800	091	SHELL AND STAND ASSEMBLY: 16X16 SINGLE DOOR	X		
	P	149802	091	SHELL AND STAND ASSEMBLY: 20X20" SINGLE DOOR		X	
	P	149804	091	SHELL AND STAND ASSEMBLY: 20X20" DOUBLE DOOR			X
1		NLA		SHELL, Single door sterilizer	1		
	P	149803	091	SHELL, Single door sterilizer		1	
		NLA		SHELL, Double door sterilizer			1
2	P	8648	061	HEX NUT (1/4-20 Monel)	6	6	6
3	P	96914	061	STEAM BAFFLE	1		
	P	96916	061	STEAM BAFFLE		1	1
4	P	90575	061	LOCKWASHER (1/4 Monel)	4	4	4
5	P	90441	045	PLAIN WASHER		2	2
6	P	98469	010	STAND, Base	1		
	P	98470	010	STAND, Base		1	1
7	P	5503	045	PLAIN WASHER	4	4	4
8	P	19687	061	LOCKWASHER (3/8)	4	4	4
9	P	12439	045	CAPSCREW, Socket head (3/8-16 x 3/4)	4	4	4
10	P	90407	045	SCREW, Square head	4	4	4
11	P	89034	020	FRAME PLATE	1		
	P	89081	091	FRAME PLATE		1	1
12	P	13411	091	CAPSCREW, Socket head (1/4-20 x 5/8)	6	6	5
13	P	10436	041	LOCKWASHER (1/4)	6	6	5
14	P	3899	091	CAPSCREW (5/16-18 x 3/4)	2	2	2
15	P	19679	041	LOCKWASHER (5/16)	2	2	2
16	P	33788	091	STRIP HEATER	3		
	P	89071	091	STRIP HEATER		3	3
17	P	89072	020	HEATER CLAMP	4	4	4
18	P	3097	041	HEX NUT (1/4-20)	6	6	6
19	P	19678	045	LOCKWASHER (1/4)	4	4	4
20	P	51342	091	TERMINAL COVER ASSEMBLY	3	3	3
21	P	48912	061	BULB SUPPORT	2	2	2
22				Not Used			
23	P	89107	020	SHIM	2		
	P	759117	091	*KIT, Insulation	AR		
	P	764184	091	*KIT, Insulation		AR	
	P	764315	025	*KIT, Insulation			AR

*Insulation Kit Includes:
- Insulation
- Strapping
- Strap Seal
- Insulation Tape

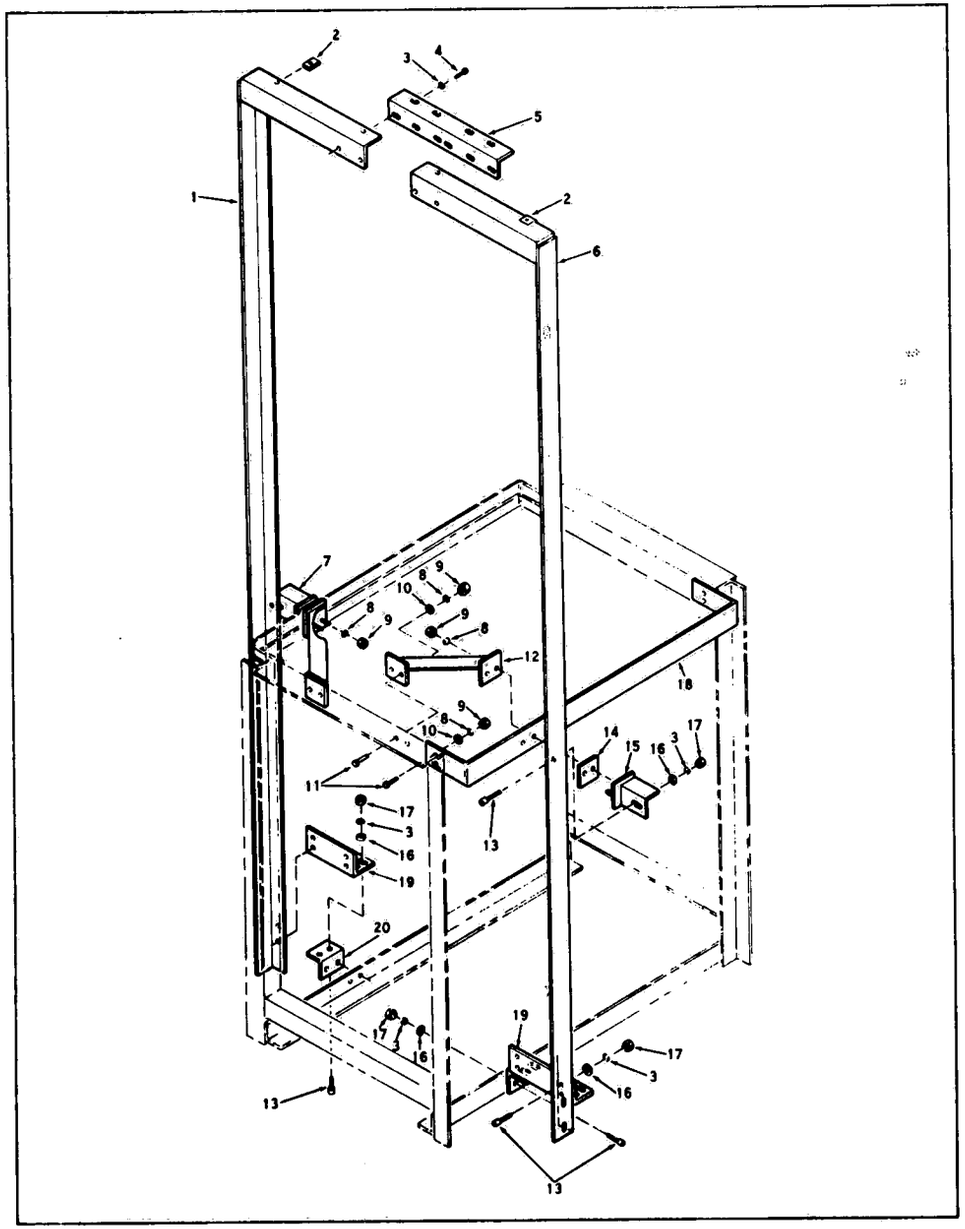


Figure 7-3. STAND MODIFICATION: 20" x 20" Double Door, Recessed, One Wall

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-3-	P	149808	091	STAND MODIFICATION: 20" X 20" DOUBLE DOOR, RECESSED, ONE WALL	X
1	P	96782	010	CORNER ASSEMBLY, Left hand	1
2	P	89431	045	• SPEED NUT	2
3	P	5596	041	LOCKWASHER (5/16)	18
4	P	4614	041	SCREW, Hex head (5/16-18 x 1/2)	4
5	P	89434	010	BRACE, Expanding	1
6	P	96781	010	CORNER ASSEMBLY, Right hand	1
7	P	89441	010	ANGLE, Frame, left hand	1
8	P	19686	061	LOCKWASHER (1/4)	12
9	P	3040	042	HEX NUT (1/4-20)	12
10	P	3515	041	WASHER, Flat (1/4)	8
11	P	4685	051	CAPSCREW (1/4-20 x 1-1/4)	8
12	P	89435	010	BRACE, Angle	2
13	P	4251	041	CAPSCREW (5/16-18 x 7/8)	14
14	P	89438	010	PLATE, Spacer	2
15	P	89440	010	ANGLE, Frame, right hand	1
16	P	5590	042	WASHER, Flat	14
17	P	3043	041	HEX NUT (5/16-18)	14
18	P	89418	010	STRAP, Frame	1
19		NLA		ANGLE, Lower	2
20		NLA		ANGLE BRACE	2

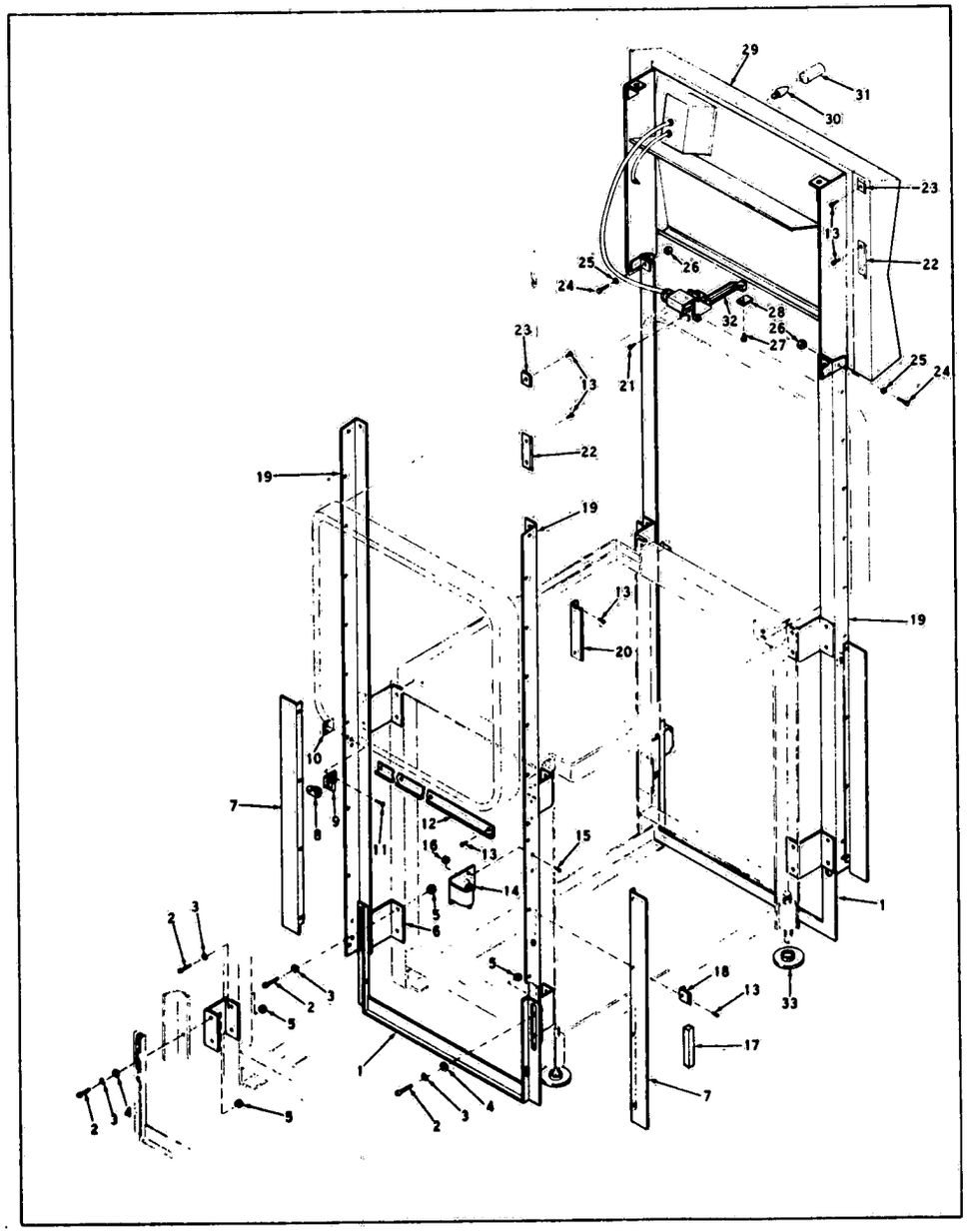


Figure 7-4. SUB-FRAME HARDWARE.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-4-	P	96219	091	SUB-FRAME HARDWARE: 26" CABINET	X		
	P	96220	091	SUB-FRAME HARDWARE: 30" CABINET		X	
	P	133659	091	SUB-FRAME HARDWARE: 30" CABINET (DOUBLE DOOR)			X
1	P	96188	010	FRONT SUPPORT	1		
	P	96189	010	FRONT SUPPORT		1	2
2	P	3902	091	CAPSCREW, Hex head	16	16	32
3	P	19680	041	LOCKWASHER	16	16	32
4	P	5503	045	FLAT WASHER	4	4	8
5	P	3099	042	NUT, Hex full	16	16	32
6	P	90012	010	FRONT FRAME SPACER	4		
	P	90019	010	FRONT FRAME SPACER		4	8
7	P	90024	010	ACCESS DOOR FRAME ANGLE, Left hand	1	1	2
	P	90025	010	ACCESS DOOR FRAME ANGLE, Right hand	1	1	2
8	P	90382	010	METAL CABINET CATCH	1	1	2
9	P	90384	001	CATCH BRACKET	1	1	2
10	P	90385	045	NUT PLATE	1	1	2
11	P	26812	041	SCREW, Truss head	2	2	4
12	P	90657	061	LIGHT SHIELD	1		
	P	90658	061	LIGHT SHIELD		1	2
13	P	90170	045	SCREW, Self tapping	24	24	56
14	P	90107	010	ACCESS DOOR HINGE	2	2	4
15	P	3953	041	SCREW, Flat head	4	4	8
16	P	90111	091	HINGE SPACER	2	2	4
17	P	90596	091	RUBBER SEAL	1		
	P	90597	091	RUBBER SEAL		1	2
18	P	90432	061	SPRING SEAL CLAMP	6	6	12
19	P	96008	010	FRAME LEG, Left front	1	1	2
	P	96009	010	FRAME LEG, Right front	1	1	2
20	P	89563	061	SPRING SEAL CLAMP	6	6	12
21	P	90168	045	SCREW, Self tapping			2
22	P	89422	061	SPRING SEAL RETAINER	2	2	4
23	P	89479	061	SPRING SEAL CLAMP	2	2	4
24	P	3848	051	CAPSCREW, Hex head	4	4	8
25	P	19678	045	LOCKWASHER	4	4	8
26	P	3097	041	HEX NUT, Full	4	4	8
27	P	74307	061	SCREW, Socket head			2
28	P	90891	045	SWITCH ARM EXTENSION			1
29	P	149790	091	REAR STERILIZER CONTROL ASSEMBLY, Double door (See figure 7-29)			1
30	P	48111	091	LAMP			2
31	P	90345	040	LIGHT SHIELD			2
32	P	139624	091	DOOR SWITCH ASSEMBLY For Units Shipped Before 9/76 (See Figure 7-24)			1
	P	134319	001	DOOR SWITCH ASSEMBLY For Units Shipped After 9/76 (See Figure 7-24A)			1
33	P	90423	091	FOOT	4	4	4

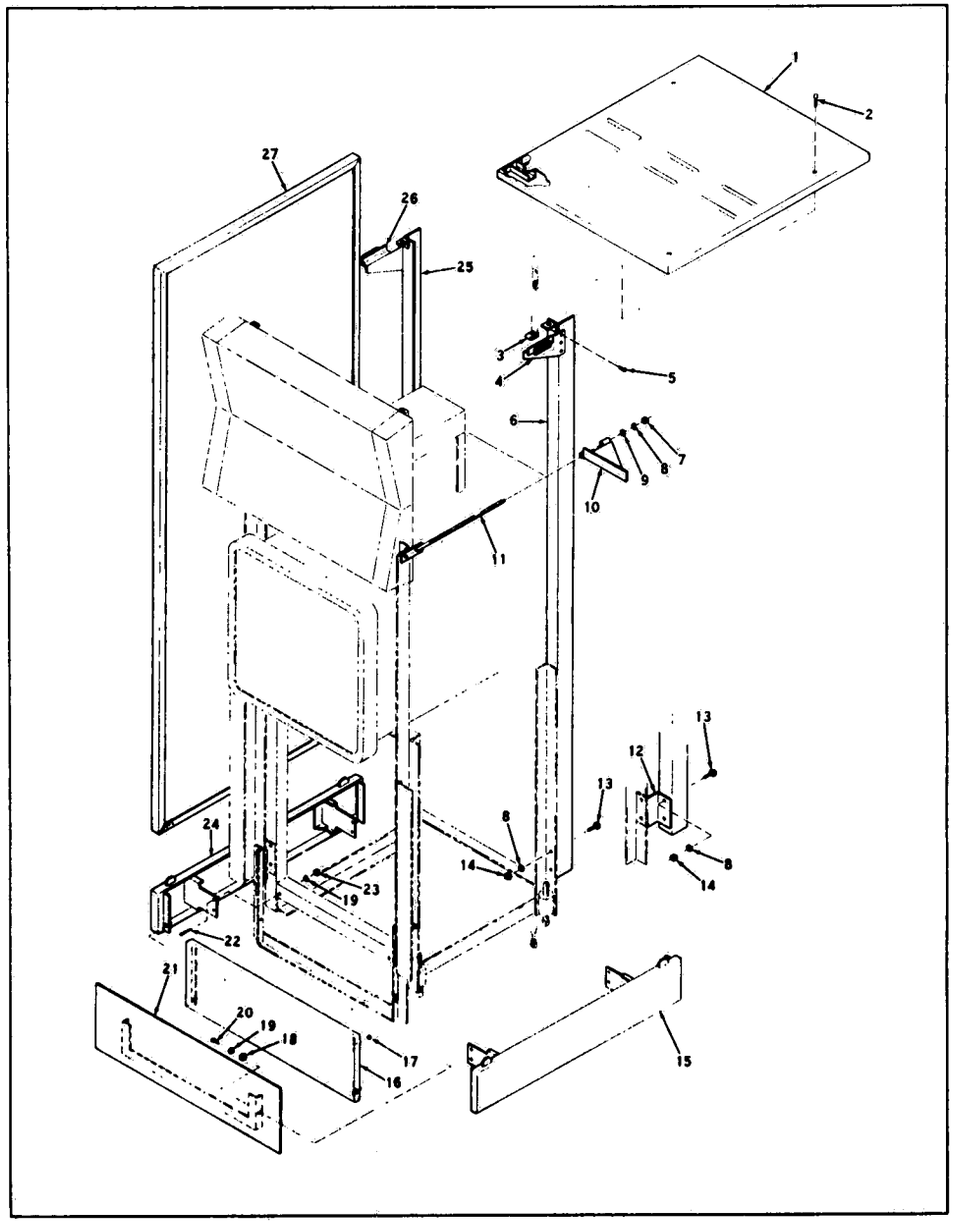


Figure 7-5. EXTERIOR HARDWARE: Single Door Sterilizers.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY					
7-5-	96289-91	EXTERIOR HARDWARE: 26" CABINET, PAINTED	X					
	96393-91	EXTERIOR HARDWARE: 26" CABINET, STAINLESS STEEL		X				
	96233-91	EXTERIOR HARDWARE: 26" RECESSED			X			
	96290-91	EXTERIOR HARDWARE: 30" CABINET, PAINTED				X		
	96396-91	EXTERIOR HARDWARE: 30" CABINET, STAINLESS STEEL					X	
	96234-91	EXTERIOR HARDWARE: 30" RECESSED						X
1	96022-10	TOP ASSEMBLY	1					
	96395-91	TOP ASSEMBLY		1				
	96023-10	TOP ASSEMBLY				1		
	96398-91	TOP ASSEMBLY					1	
2	43255-91	SCREW, Socket head (1/4-20 x 1)	4	4		4	4	
3	44086-45	SPEED NUT (1/4-20)	4	4		4	4	
4	89220-10	PANEL SUPPORT ASSEMBLY, Right hand	2	2		2	2	
5	91022-45	SCREW, Self tapping	12	12		12	12	
6	90043-10	LEG, Rear frame, right hand	1	1		1	1	
7	15297-51	HEX NUT, Full			2			2
8	19680-41	LOCKWASHER (3/8)	8	8	2	16	16	2
9	5503-45	FLAT WASHER			2			2
10	89379-10	BRACE			2			2
11	90430-10	SCREW, Brace			2			2
12	90019-10	SPACER, Rear frame				4	4	
13	3902-41	CAPSCREW, Hex head (3/8-16 x 1)	8	8		16	16	
14	3099-42	HEX NUT (3/8-16)	8	8		16	16	
15	96031-10	SIDE KICK PANEL, Right hand	1	1				
	96033-10	SIDE KICK PANEL, Right hand				1	1	
16	90047-10	FRONT KICK PANEL	1	1				
	90048-10	FRONT KICK PANEL				1	1	
17	90046-91	. BUTTON, Rubber	2	2		2	2	
18	11149-91	FLAT WASHER			2			2
19	19678-45	LOCKWASHER (1/4)	4	4	2	4	4	2
20	3846-41	CAPSCREW, Hex			2			2
21	90453-10	SKIRT PLATE			1			
	90457-10	SKIRT PLATE						1
22	3947-41	MACHINE SCREW (1/4-20 x 1)	4	4		4	4	
23	3097-41	HEX NUT (1/4-20)	4	4		4	4	
24	96032-10	SIDE KICK PANEL, Left hand	1	1				
	96034-10	SIDE KICK PANEL, Left hand				1	1	
25	90044-10	LEG, Rear frame, left hand	1	1		1	1	
26	89219-10	PANEL SUPPORT ASSEMBLY, Left hand	2	2		2	2	
27	96024-10	SIDE PANEL	2					
	96394-63	SIDE PANEL		2				
	96025-10	SIDE PANEL				2		
	96397-63	SIDE PANEL					2	

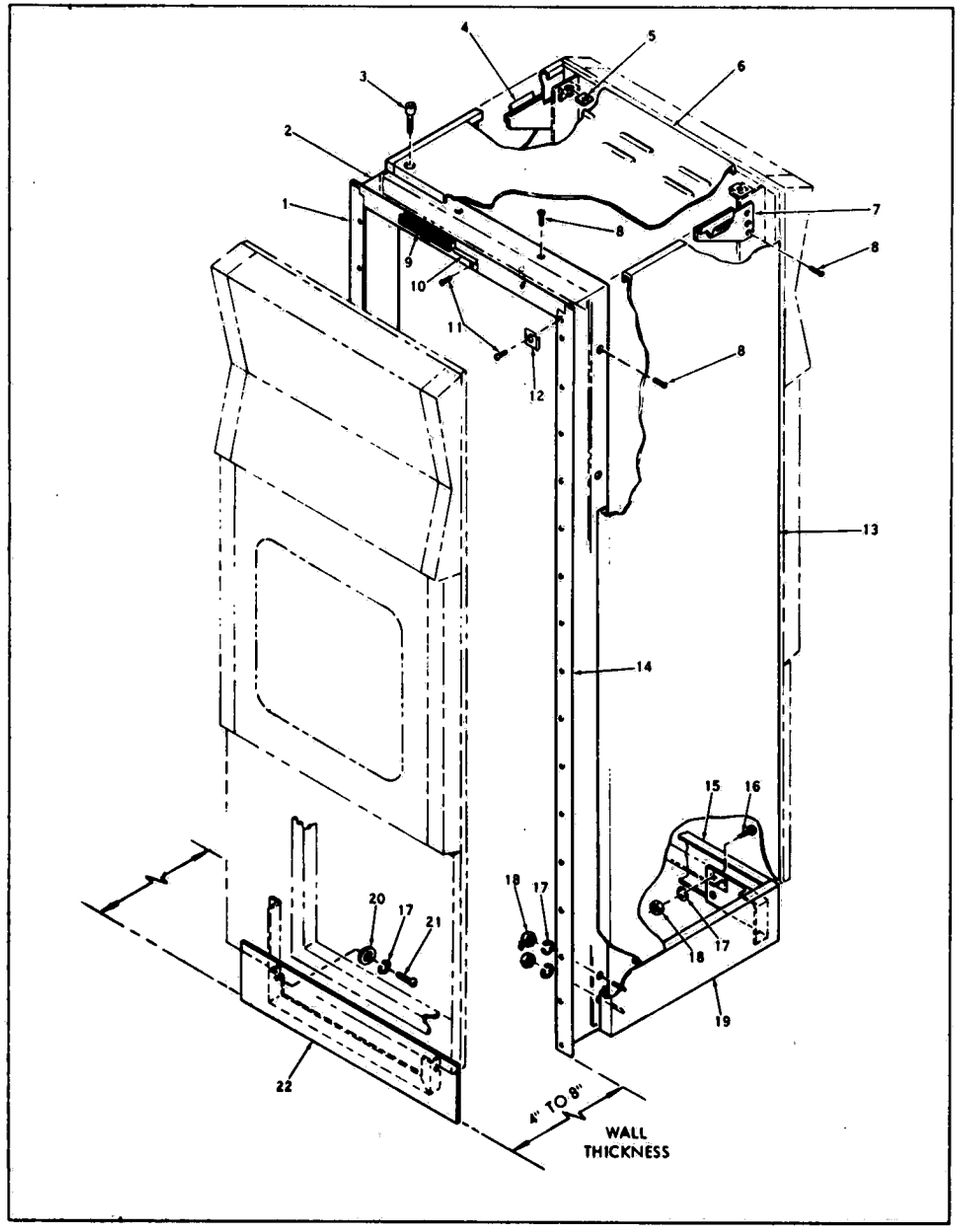


Figure 7-6. EXTERIOR HARDWARE: 30" Recessed, Double Door, One and Two Walls.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-6-	P	98441	091	EXTERIOR HARDWARE: 30" RECESSED, DOUBLE DOOR, ONE WALL	X		
	P	96772	091	EXTERIOR HARDWARE: 30" RECESSED, DOUBLE DOOR, TWO WALLS		X	
1	P	139941	061	SIDE PANEL, Expanding, left hand	1		
2	P	96787	061	TOP PANEL ASSEMBLY, Expanding	1		
3	P	43255	091	SCREW, Socket head	4		
4	P	89219	010	PANEL SUPPORT ASSEMBLY, Left hand	1		
5	P	44086	045	SPEED NUT	2		
6	P	96792	010	TOP ASSEMBLY	1		
7	P	89220	010	PANEL SUPPORT ASSEMBLY, Right hand	1		
8	P	91022	045	SCREW, Self tapping	18		
9	P	90597	091	SEAL, Rubber	1		
10	P	89422	061	SEAL RETAINER	17		
11	P	90168	045	SCREW, Self tapping	40		
12	P	89479	061	CLAMP, Spring seal	2		
13	P	96770	063	SIDE PANEL	2		
14	P	139942	061	SIDE PANEL, Expanding, right hand	1		
15	P	90048	010	FRONT PANEL	1		
16	P	3947	041	SCREW, Machine	2		
17	P	19678	045	LOCKWASHER	8	4	
18	P	3097	041	HEX NUT	6		
19	P	96754	010	KICK PANEL, Right hand	1		
	P	96756	010	KICK PANEL, Left hand	1		
20	P	11149	091	FLAT WASHER	2	4	
21	P	4006	041	SCREW, Machine	2		
	P	3846	041	CAPSCREW, Hex head		4	
22	P	90457	010	SKIRT PLATE	1	2	

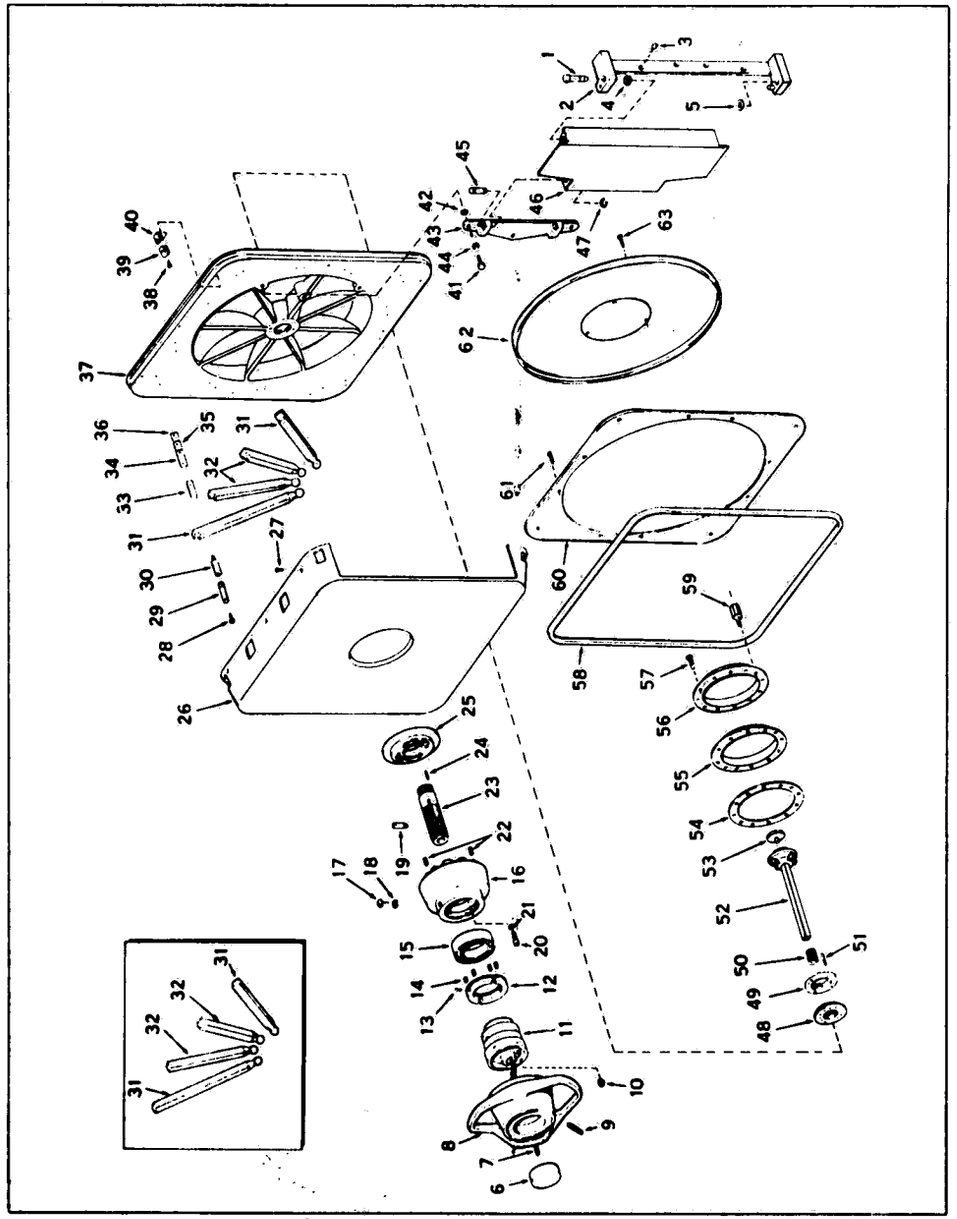


Figure 7-7. DOOR ASSEMBLY AND HINGE HARDWARE.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-7-	P	90580	091	HINGE HARDWARE: 16" X 16"	X		
	P	90581	091	HINGE HARDWARE: 20" X 20"		X	
1	P	90041	063	PIN, Hinge	2	2	
2	P	90034	063	HINGE, Door	1		
	P	90119	063	HINGE, Door		1	
3	P	43845	045	CAPSCREW, Socket head	4	4	
4	P	12706	045	RING, Retaining	2	2	
5	P	89617	061	WASHER, Hinge	1	1	
	P	149507	091	DOOR ASSEMBLY, 16" x 16"	X		
	P	149512	091	DOOR ASSEMBLY, 20" x 20" (For Units Built Before 12/76)		X	
				DOOR ASSEMBLY, 20" x 20" (For Units Built After 12/76)			X
6	P	90206	010	BUTTON ASSEMBLY, Clutch rod	1	1	
7	P	24911	091	• SCREW, Button	1	1	
8	P	139541	095	HANDLE, Chamber door	1	1	
9	P	42663	045	SETSCREW	3	3	
10	P	90475	091	FITTING, Lubrication	1	1	
11	P	96102	091	NUT, Handle	1	1	
12	P	13194	091	THRUST RING ASSEMBLY	1	1	
13	P	47598	061	DRIVE SCREW	1	1	
14	P	12260	091	SPRING, Thrust ring	4	4	
15	P	6416	091	BEARING, Ball thrust	1	1	
16	P	96181	056	PLATE, Top socket	1		
	P	96181	056	PLATE, Top socket		1	
17	P	10570	061	SCREW, Truss head	2	2	
18	P	19678	045	LOCKWASHER	2	2	
19	P	8303	091	KEY, Door	2	2	
20	P	12264	042	SCREW, Socket head	6	6	
21	P	5596	041	LOCKWASHER	6	6	
22	P	22996	061	PIN, Roll	2	2	
23	P	22058	091	POST, Door	1	1	
24	P	2893	061	PIN	1	1	
25	P	11819	056	PLATE, Bottom socket	1		
	P	11817	056	PLATE, Bottom socket		1	
26	P	139540	063	COVER, Chamber door	1		
	P	149502	063	COVER, Chamber door		1	
27	P	90562	061	SCREW, Self tapping	9	9	
28	P	39863	091	SCREW, Round head	24	24	
29	P	33430	051	LINK, Arm clip	12		
	P	33432	051	LINK, Arm clip		12	
30	P	33429	001	STUD, Arm clip	24		
	P	33431	062	STUD, Arm clip		24	
	M	150135	001	STUD, Arm clip			24
31	P	24501	053	ARM, Corner	4		
	P	27099	063	ARM, Corner		4	
32	P	24504	053	ARM, Side	8		
		NLA		ARM, Side		8	
33	P	33435	051	BLOCK, Arm clip fulcrum	12		
	P	33434	051	BLOCK, Arm clip fulcrum		12	
	M	150134	001	BLOCK, Arm clip fulcrum			12
34	P	39910	091	SHIM	X	X	
35	P	39911	091	SHIM	X	X	
36	P	39912	091	SHIM	X	X	
37	P	149505	091	DOOR, Chamber	1		
†				DOOR, Chamber		1	
	M	141105	001	DOOR, Chamber			1
38	P	90169	045	SCREW, Self tapping	9	9	
39	P	90198	045	SPEED NUT 8A	9	9	

†To replace chamber door on units built before 12/76, order kit Q-759581-001.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-7-40	P	90440	061	BRACKET, Door cover	9	9	
	M	150136	001	BRACKET, Door cover			5
41	P	3860	041	SCREW, Hex head	3		
	P	89257	041	SCREW, Hex head		3	
42	P	52149	045	LOCKWASHER, Shakeproof	3		
	P	52148	045	LOCKWASHER, Shakeproof		3	
43	P	93300	002	BRACKET, Door hinge	1		
	P	26855	091	BRACKET, Door hinge		1	
	M	134194	001	BRACKET, Door hinge			1
44	P	43362	061	WASHER, Plain	3		
	P	43448	061	WASHER, Spring		3	
	M	17264	042	WASHER, Flat			3
45	P	24520	001	PIN, Door hinge	2		
	P	89265	001	PIN, Door hinge		2	
46	P	93303	001	HINGE, Door	1		
	P	96096	063	HINGE, Door		1	
47	P	12706	045	RING, Retaining	4	4	
48	P	22057	091	NUT, Door post	1	1	
49	P	9083	091	RING, Lock clutch	1	1	
50	P	79877	NLA	SPRING, Lock clutch rod (Sub: P-12267-001)	1	1	
51	P	21428	061	PIN, Dowel	2	2	
52	P	90363	091	ROD, Lock clutch	1	1	
53	P	8778	091	THRUST PLATE ASSEMBLY	1	1	
54	P	7753	091	GASKET, Diaphragm	1	1	
55	P	7230	061	DIAPHRAGM (New Style)	1	1	
56	P	6624	042	COVER, Diaphragm	1	1	
57	P	4782	061	BOLT, Finished machine	9	9	
58	P	74367	091	GASKET	1		
	P	78767	091	GASKET		1	
59	P	74710	061	SCREW, Special	3	3	
60	P	54475	061	COVER, Door back	1		
	P	97889	061	COVER, Door back		1	
61	P	9645	061	SCREW, Drive	12	12	
62	P	54474	063	COVER, Door back	1		
	P	54476	063	COVER, Door back		1	
63	P	12283	041	SCREW, Round head	3	3	

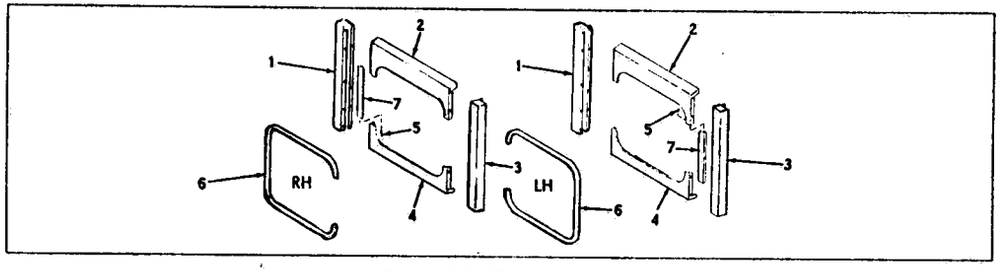


Figure 7-8. SHELL TRIM.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY			
7-8-	139532-91	SHELL TRIM: 16" X 16", RIGHT HAND	X			
	139533-91	SHELL TRIM: 16" X 16", LEFT HAND		X		
	139534-91	SHELL TRIM: 20" X 20", RIGHT HAND			X	
	139535-91	SHELL TRIM: 20" X 20", LEFT HAND				X
1	96195-63	CHAMBER PANEL TRIM	1		1	
2	96170-63	UPPER CHAMBER PANEL	1	1		
	96172-63	UPPER CHAMBER PANEL			1	1
3	96196-63	CHAMBER PANEL TRIM		1		1
4	96171-63	LOWER CHAMBER PANEL	1	1		
	96173-63	LOWER CHAMBER PANEL			1	1
5	90168-45	SCREW, Self tapping	11	11	12	12
6	90183-91	GASKET, Chamber trim	1	1		
	90184-91	GASKET, Chamber trim			1	1
7	90074-63	CHAMBER SIDE PANEL	1	1		
	90117-63	CHAMBER SIDE PANEL			1	1

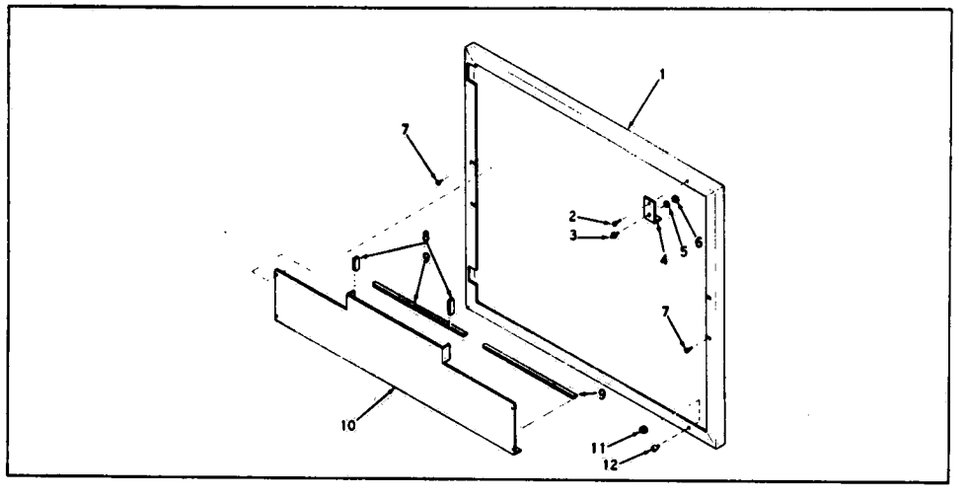


Figure 7-9. ACCESS DOOR ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-9-	P	96176	091	ACCESS DOOR ASSEMBLY: 16" X 16", RIGHT HAND	X		
	P	96178	091	ACCESS DOOR ASSEMBLY: 20" X 20", RIGHT HAND		X	
1	P	90108	091	PANEL, Access door	1		
	P	90114	091	PANEL, Access door		1	
2	P	90170	045	SCREW, Self tapping (#8)	1	1	
3	P	90387	001	STRIKE, Door catch	1	1	
4	P	91921	061	BRACKET, Door catch strike	1	1	
5	P	19690	061	LOCKWASHER (#8)	1	1	
6	P	3038	041	HEX NUT (#8-32)	1	1	
7	P	90168	045	SCREW, Self tapping (#10)	4	4	
8	P	89575	091	CHANNEL, Rubber	2	2	
9	P	90439	091	CHANNEL, Rubber	2		
	P	90438	091	CHANNEL, Rubber		2	
10	P	90112	031	RACK, Chart	1		
	P	90113	031	RACK, Chart		1	
11	P	3037	041	HEX NUT (#6-32)	1	1	
12	P	90383	091	BUMPER, Slotted screw	1	1	

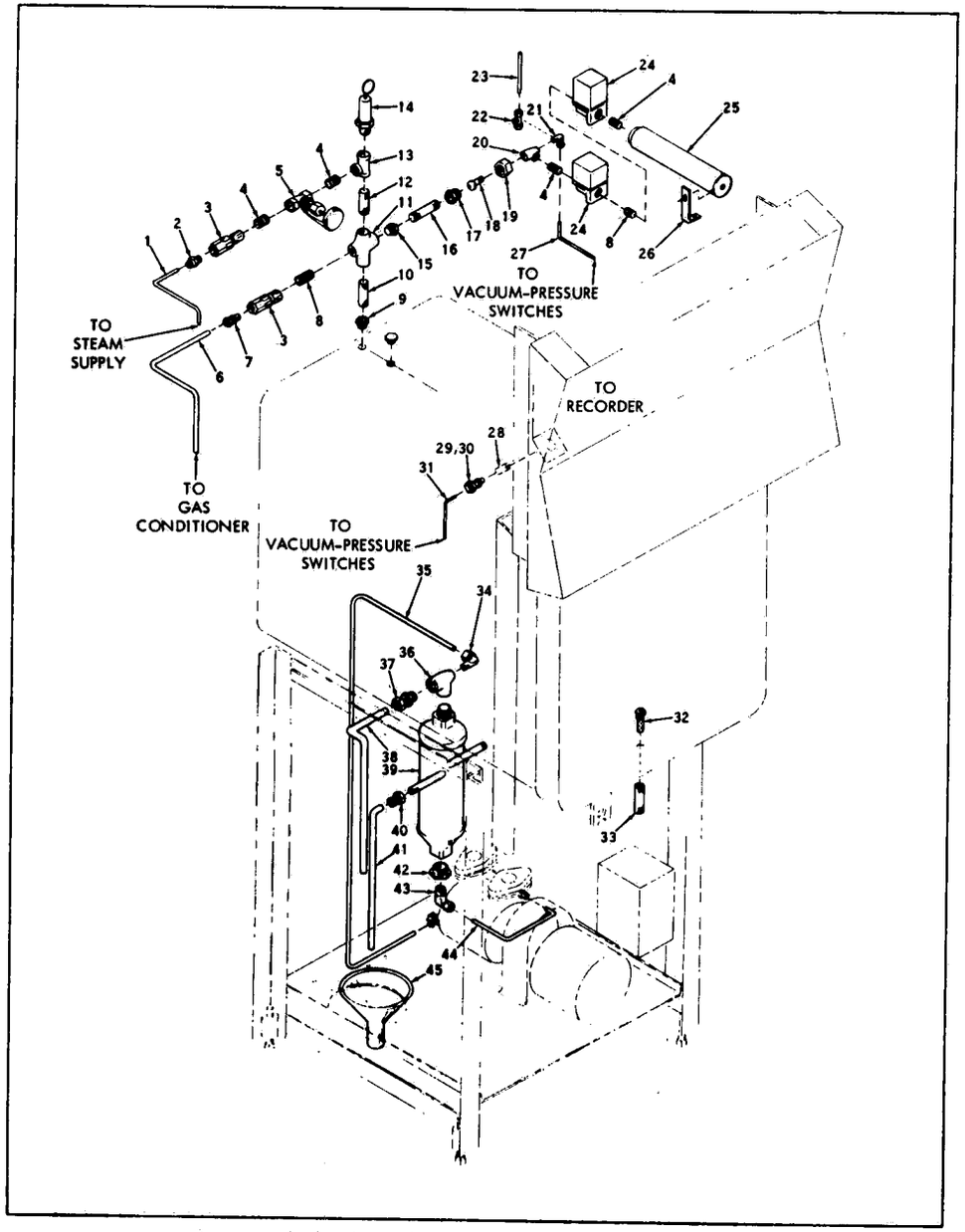


Figure 7-10. PIPING PACKAGE: Tubing, Air and Exhaust Systems.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY					
7-10-				PIPING PACKAGE: 16 X 16" WITH ATMOSPHERIC EXHAUST	X					
				PIPING PACKAGE: 16 X 16" WITH CONDENSER EXHAUST		X				
				PIPING PACKAGE: 20 X 20" WITH ATMOSPHERIC EXHAUST (SINGLE DOOR)			X			
				PIPING PACKAGE: 20 X 20" WITH CONDENSER EXHAUST (SINGLE DOOR)				X		
				PIPING PACKAGE: 20 X 20" WITH ATMOSPHERIC EXHAUST (DOUBLE DOOR)					X	
				PIPING PACKAGE: 20 X 20" WITH CONDENSER EXHAUST (DOUBLE DOOR)						X
1	P	89044	091	TUBE (3/16 OD)	1	1				
	P	89147	091	TUBE (3/16 OD)			1	1	1	1
	P	96930	091	AIR PIPING	X	X	X	X	X	X
2	P	41291	091	• COMPRESSION FITTING (1/4 IPS x 3/16 ODT)	1	1	1	1	1	1
3	P	42094	061	• CHECK VALVE (1/4)	2	2	2	2	2	2
4	P	28917	091	• NIPPLE (1/4 x 1)	4	4	4	4	4	4
5	P	89076	091	• NEEDLE VALVE (1/4 NPT)	1	1	1	1	1	1
6	P	89045	091	TUBE (3/8 OD)	1	1				
	P	89044	091	TUBE (3/8 OD)			1	1	1	1
7	P	6785	091	• COMPRESSION FITTING (1/4 IPS x 3/8 ODT)	1	1	1	1	1	1
8	P	27422	051	• NIPPLE (1/4 x 1-1/4)	2	2	2	2	2	2
9	P	837	042	• REDUCING BUSHING (1/2 x 3/8)	1	1	1	1	1	1
10	P	29016	051	• NIPPLE (3/8 x 1-3/4)	1	1	1	1	1	1
11	P	1335	091	• CROSS (3/8 x 3/8 x 3/8 x 1/4)	1	1	1	1	1	1
12	P	29015	051	• NIPPLE (3/8 x 1-1/2)	1	1	1	1	1	1
13	P	4910	091	• TEE (3/8 x 3/8 x 1/4)	1	1	1	1	1	1
14	P	150498	001	• SAFETY VALVE (3/8 IPS - 33#)	1	1	1	1	1	1
15	P	849	042	• REDUCING BUSHING (3/8 x 1/4)	1	1	1	1	1	1
16	P	28923	051	• NIPPLE (1/4 x 2-1/2)	1	1	1	1	1	1
17	P	1617	051	• THREAD END (1/4)	1	1	1	1	1	1
18	P	4048	044	• SPUD, Male (1/4)	1	1	1	1	1	1
19	P	2900	051	• UNION NUT (1/4)	1	1	1	1	1	1
20	P	4900	091	• TEE (1/4 x 1/8 x 1/4)	1	1	1	1	1	1
21	P	41257	091	• COMPRESSION ELL (3/16 ODT x 1/8 IPS)	1	1	1	1		
22	P	41222	091	COMPRESSION TEE (1/8 IPS x 3/16 ODT)					1	1
23	P	51479	091	TUBE (3/16 OD)					1	1
24	P	41051	091	• SOLENOID VALVE (1/4)	2	2	2	2	2	2
	P	752244	091	• • GASKET	2	2	2	2	2	2
	P	752777	091	• • BODY (Only)	2	2	2	2	2	2
	P	753429	091	• • SEAT AND PLUNGER	2	2	2	2	2	2
	P	757088	091	• • COIL, 120 volt, 60 hz	2	2	2	2	2	2
25	P	41319	091	• AIR FILTER ASSEMBLY (See figure 7-16)	1	1	1	1	1	1
26	P	41325	042	• PIPE SUPPORT	1	1	1	1	1	1
27	P	51483	091	TUBE (3/16 OD)	1	1				
	P	51482	091	TUBE (3/16 OD)			1	1		
	P	51479	091	TUBE (3/16 OD)					1	1
28	P	1306	091	COUPLING (1/8)					1	1
29	P	41291	091	COMPRESSION FITTING (1/4 IPS x 3/16 ODT)	1	1	1	1	1	1
30	P	37785	091	COMPRESSION FITTING (1/4 IPS x 3/16 ODT)					1	1
31	P	51302	091	TUBE (3/16 OD)	1	1				
	P	51301	091	TUBE (3/16 OD)			1	1	1	1
	P	51482	091	TUBE (3/16 OD)					1	1
32	P	12243	042	CHAMBER DRAIN SCREEN	1	1	1	1	1	1
33	P	51398	061	NIPPLE, Special	1	1	1	1	1	1
34	P	7051	091	COMPRESSION ELL (1/4 IPS x 5/16 ODT)	1	1	1	1	1	1
35	P	51299	091	TUBING (5/16 OD)	1	1	1	1	1	1
36	P	4911	091	TEE (1/2 x 1/4 x 1/2)	1	1	1	1	1	1
37	P	20173	091	COMPRESSION FITTING (1/2 IPS x 1/2 ODT)		1		1		1
38	P	89017	091	TUBE (1/2 OD)		1		1		1
39	P	96929	091	SURGE TANK	1	1	1	1	1	1

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY					
7-10-40	P	30948	091	COMPRESSION FITTING (1/2 IPS x 5/8 ODT)	1	1	1	1	1	1
41	P	89046	091	TUBE (5/8 OD)	1	1	1	1	1	1
42	P	837	091	REDUCING BUSHING (1/2 x 3/8)	1	1	1	1	1	1
43	P	43041	091	COMPRESSION ELL (1/4 ODT x 3/8 IPS)	1	1	1	1	1	1
44	P	89043	091	TUBE (1/4 OD)	1	1	1	1	1	1
45	P	55950	091	FUNNEL ASSEMBLY, Anti-splash	1	1	1	1	1	1
46	P	3441	091	PIPE PLUG (3/8 NPT)	1	1	1	1	1	1

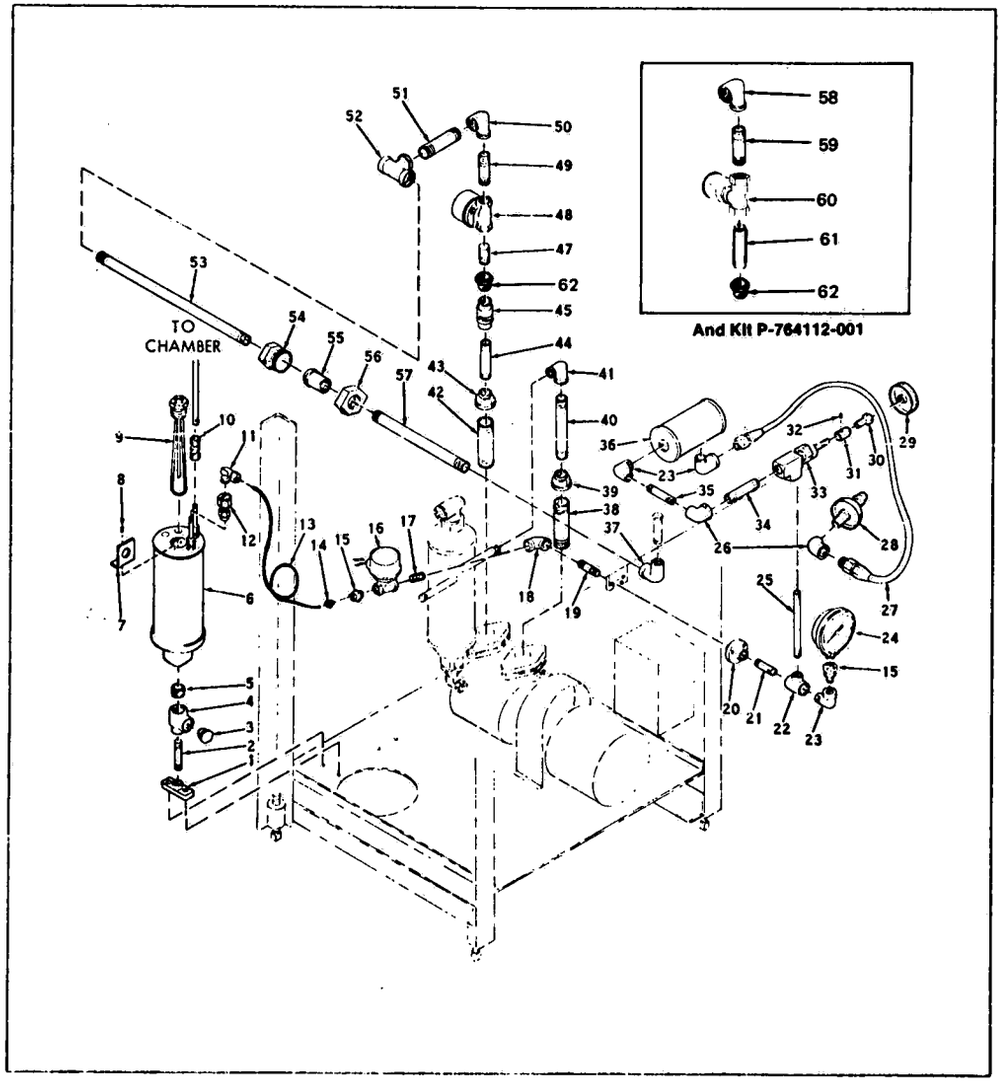


Figure 7-11. COMMON PIPING: Gas Conditioner, Gas and Vacuum Systems.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11-	P	149812	001	COMMON PIPING: 16 X 16" AND 20 X 20" STERILIZERS	X
1	P	9613	091	SUPPORT	1
2	P	50591	091	LEG	1
3	P	3442	091	PIPE PLUG (1/2)	1
4	P	4911	091	TEE (1/2 x 1/4 x 1/2)	1
5	P	29163	044	NIPPLE (1/2 x 1-1/4)	1
6	P	98018	091	GAS CONDITIONER	1
7	P	51405	045	BRACKET, Conduit	1
8	P	3969	041	SCREW, Round head (1/4-20 x 1/4)	1
9	P	50565	091	HEATER	1
10	P	34632	091	COMPRESSION COUPLING (3/8 ODT)	1
11	P	26181	091	COMPRESSION ELL (1/8 IPS x 1/8 ODT)	1
12	P	30722	091	COMPRESSION COUPLING (3/8 ODT x 1/8 IPS)	1
13	P	89053	091	TUBE (1/8 OD)	1
	P	134061	001	GAS PIPING ASSEMBLY	X
14	P	20344	091	• COMPRESSION FITTING (1/8 IPS x 1/8 ODT)	1
15	P	939	042	• REDUCING BUSHING (1/4 x 1/8)	2
16	P	129289	001	• SOLENOID VALVE	1
	P	764270	001	• • REPAIR KIT	A/R
	P	764270	002	• • COIL, 120 volt	A/R
17	P	28917	091	• NIPPLE (1/4 x 1)	1
18	P	7436	091	• ELL (1/4 x 45°)	1
19	P	28919	091	• NIPPLE (1/4 x 1-1/2)	1
20	P	40018	051	• BASE, Manifold	1
21	P	29030	051	• NIPPLE (3/8 x 2-3/4)	1
22	P	4907	091	• TEE (3/8 x 1/4 x 1/4)	1
23	P	1619	051	• STREET ELL (1/4)	3
24	P	51309	091	• GAUGE (0# to 300#)	1
25	P	28933	091	• NIPPLE (1/4 x 5)	1
26	P	1618	091	• ELL (1/4)	2
27	P	74070	091	• HOSE ASSEMBLY	1
28	P	50438	045	• INLET	1
29	P	54899	091	• KNOB	1
30	P	8605	043	• NUT, Handwheel	1
31	P	NLA	043	• ADAPTER (1/4-20 UNC) For Units Shipped Before 10/75) (89150)	1
	P	150520	001	• ADAPTER (#10-24 UNC) For Units Shipped After 10/75	1
32	P	34518	061	• SET SCREW (#8-32 x 1/4)	1
33	P	150519	001	• ANGLE VALVE (1/4-20 UNC) For Units Shipped Before 10/75	1
	P	150519	001	• ANGLE VALVE (#10-24 UNC) For Units Shipped After 10/75	1
34	P	28923	051	• NIPPLE (1/4 x 2-1/2)	1
35	P	28921	091	• NIPPLE (1/4 x 2)	1
36	P	47214	091	• FILTER ASSEMBLY (See figure 7-15)	1
37	P	1635	091	ELBOW (3/4)	1
38	P	40281	091	NIPPLE (1-1/4 x 3-1/4)	1
39	P	3571	091	REDUCER (3/4 x 1-1/4)	1
40	P	29302	091	NIPPLE (3/4 x 4)	1
41	P	1625	091	ELL (3/4 x 1/2)	1
				VACUUM PIPING	X
42	P	40281	091	• NIPPLE (1-1/4 x 3-1/4)	1
43	P	3571	091	• REDUCER (3/4 x 1-1/4)	1
44	P	29297	091	• NIPPLE (3/4 x 2-3/4)	1
45	P	44317	091	• CHECK VALVE (3/4)	1
46				Not Used	
47	P	29164	051	• NIPPLE (1/2 x 1/2)	1
48				• SOLENOID VALVE (1/2) (See items 58 to 62 and paragraph 6-10)	1
49	P	29166	051	• NIPPLE (1/2 x 2)	1
50	P	1625	091	• ELBOW (1/2 x 3/4)	1
51	P	29297	091	• NIPPLE (3/4 x 2-3/4)	1
52	P	4925	091	• TEE (3/4 x 1/2 x 3/4)	1
53	P	29320	091	NIPPLE (3/4 x 8-1/2)	1
54	P	1747	091	THREAD END (3/4)	1

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11- 55	P	4248	091	SPUD, Female (3/4)	1
56	P	2903	091	UNION NUT	1
57	P	29334	091	NIPPLE (3/4 x 12)	1
	P	764112	001	KIT, ASCO Solenoid Valve (See paragraph 6-10)	1
58	P	1625	091	• ELBOW (3/4 x 1/2)	1
59	P	29177	091	• NIPPLE (1/2x 4-3/4)	1
60	P	150341	001	• VALVE, ASCO Solenoid (1/2)	1
	P	764186	001	• • REPAIR KIT	A/R
	P	764078	002	• • COIL, 120 volt	A/R
61	P	29170	051	• NIPPLE (1/2 x 3)	1
62	P	836	042	• BUSHING, Reducing (1/2 x 3/4)	1

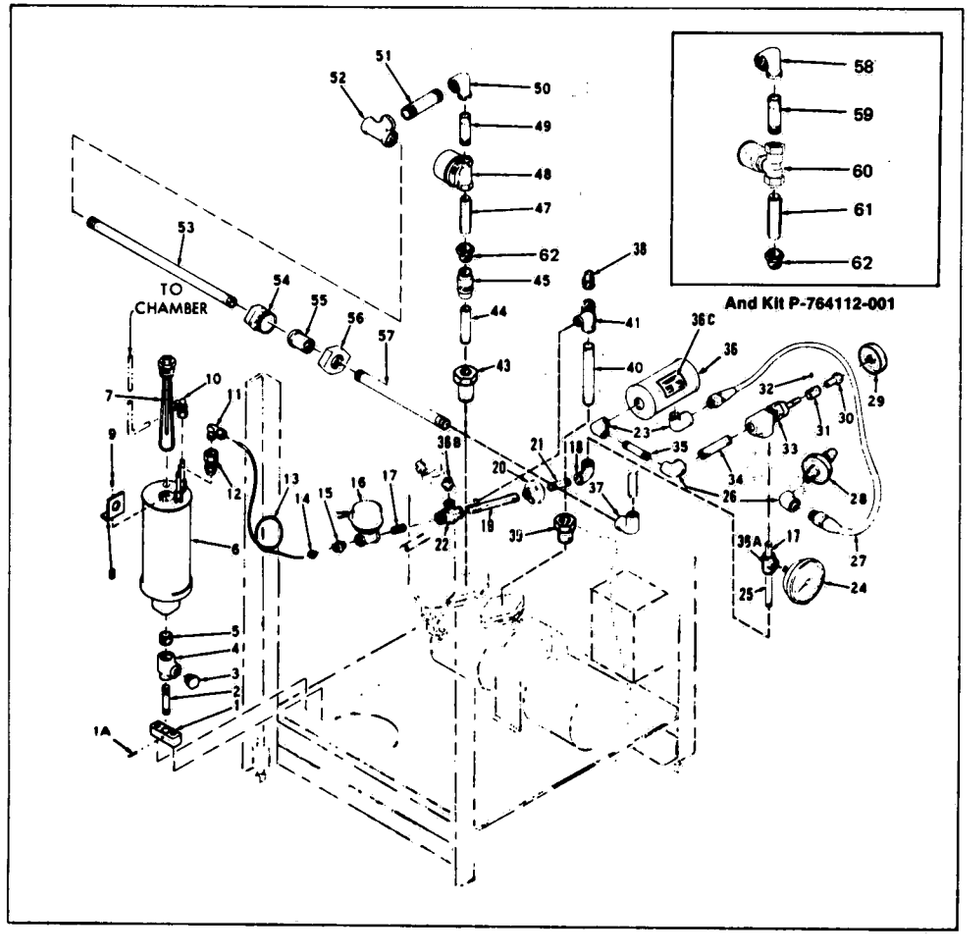


Figure 7-11A. COMMON PIPING: Gas Conditioner, Gas and Vacuum Systems.
(Units Shipped After 8/70)

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11A-	P	149812	002	COMMON PIPING: 16 X 16 AND 20 X 20" STERILIZERS	X
1	P	81131	001	SUPPORT	1
1A	P	43308	061	PIN, ROLL (1/8 x 3/4)	1
2	P	81130	001	LEG	1
3	P	3442	091	PIPE PLUG (1/2)	1
4	P	4911	091	TEE (1/2 x 1/4 x 1/2)	1
5	P	29163	044	NIPPLE (1/2 x 1-1/4)	1
6	P	98018	091	GAS CONDITIONER	1
7	P	50565	091	• HEATER	1
8	P	51405	045	BRACKET, Conduit	1
9	P	2792	045	SCREW, Round head (1/4-20 x 1/2)	2
10	P	33555	091	COMPRESSION ELBOW (3/8 ODT)	1
11	P	26181	091	COMPRESSION ELL (1/8 IPS x 1/8 ODT)	1
12	P	30722	044	COMPRESSION COUPLING (3/8 ODT x 1/8 IPS)	1
13	P	89053	091	TUBE (1/8 OD)	1
	P	134061	001	GAS PIPING ASSEMBLY	•
14	P	20344	091	• COMPRESSION FITTING (1/8 IPS x 1/8 ODT)	1
15	P	939	042	• REDUCING BUSHING (1/4 x 1/8)	1
16	P	129289	001	• SOLENOID VALVE	1
	P	764270	001	• • REPAIR KIT	A/R
	P	764270	002	• • COIL, 120 volt	A/R
17	P	28917	091	• NIPPLE (1/4 x 1)	2
18	P	1620	091	• ELL (3/8 x 1/4)	1
19	P	28937	051	• NIPPLE (1/4 x 6)	1
20	P	40018	051	• BASE, Manifold	1
21	P	29020	051	• NIPPLE (3/8 x 2-3/4)	1
22	P	4906	051	• TEE (1/4)	1
23	P	1619	091	• STREET ELL (1/4)	2
24	P	51309	091	• GAUGE (0# to 300#)	1
25	P	28926	091	• NIPPLE (1/4 x 3-1/4)	1
26	P	1618	091	• ELL (1/4)	2
27	P	74070	091	• HOSE ASSEMBLY	1
28	P	50438	045	• INLET	1
29	P	54899	091	• HANDWHEEL	1
30	P	8605	043	• NUT, Handwheel	1
31	P	NLA		• ADAPTER (1/4-20 UNC) For Units Shipped Before 10/75 (89150)	1
	P	150520	001	• ADAPTER (#10-24 UNC) For Units Shipped After 10/75	1
32	P	34518	061	• SET SCREW (#8-32 x 1/4)	1
33	P	150519	001	• ANGLE VALVE (1/4-20 UNC) For Units Shipped Before 10/75	1
	P	150519	001	• ANGLE VALVE (#10-24 UNC) For Units Shipped After 10/75	1
34	P	28923	051	• NIPPLE (1/4 x 2-1/2)	1
35	P	28921	091	• NIPPLE (1/4 x 2)	1
36	P	47214	091	• FILTER ASSEMBLY (See figure 7-15)	1
36A	P	4913	091	• TEE (1/4 x 1/4 x 1/8)	1
36B	P	41291	091	• COMPRESSION FITTING (1/4 IPS x 3/16 ODT)	1
36C	P	52723	091	• DECAL, WARNING	1
37	P	1635	091	ELBOW (3/4)	1
38	P	3442	091	PLUG, Pipe (1/2)	1
39	P	828	091	REDUCER (1-1/4 x 3/4)	1
40	P	29315	091	NIPPLE (3/4 x 7-1/4)	1
41	P	4922	091	TEE (3/4 x 1/2 x 1/2)	1
				VACUUM PIPING	•
42				• Not Used	
43	P	828	091	• REDUCER (1-1/4 x 3/4)	1
44	P	76626	091	• SPECIAL NIPPLE (3/4), Short thread up	1
45	P	44317	091	• CHECK VALVE (3/4)	1
46				• NOT USED	
47	P	29178	051	• NIPPLE (1/2 x 5)	1
48	P	42286	091	• SOLENOID VALVE (1/2) (See items 58 to 62 and paragraph 6-10)	1

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11A-	P	762485	001	• • REPAIR KIT	A/R
	P	752018	091	• • COIL, 120 volt	A/R
49	P	29166	051	• NIPPLE (1/2 x 2)	1
50	P	1625	091	• ELBOW (1/2 x 3/4)	1
51	P	29298	091	• NIPPLE (3/4 x 3)	1
52	P	4925	091	• TEE (3/4 x 1/2 x 3/4)	1
53	P	29320	091	NIPPLE (3/4 x 8-1/2)	1
54	P	1747	091	THREAD END (3/4)	1
55	P	4248	091	SPUD, Female (3/4)	1
56	P	2903	091	UNION NUT	1
57	P	29334	091	NIPPLE (3/4 x 12)	1
	P	150341	001	KIT, ASCO Solenoid Valve (See paragraph 6-10)	1
58	P	1625	091	• ELBOW (3/4 x 1/2)	1
59	P	29177	091	• NIPPLE (1/2 x 4-3/4)	1
60	P	150341	001	• VALVE, Solenoid (1/2)	1
	P	764186	001	• • REPAIR KIT	A/R
	P	764078	002	• • COIL, 120 volt	A/R
61	P	29170	051	• NIPPLE (1/2 x 3)	1
62	P	836	042	• BUSHING, Reducing (1/2 x 3/4)	1

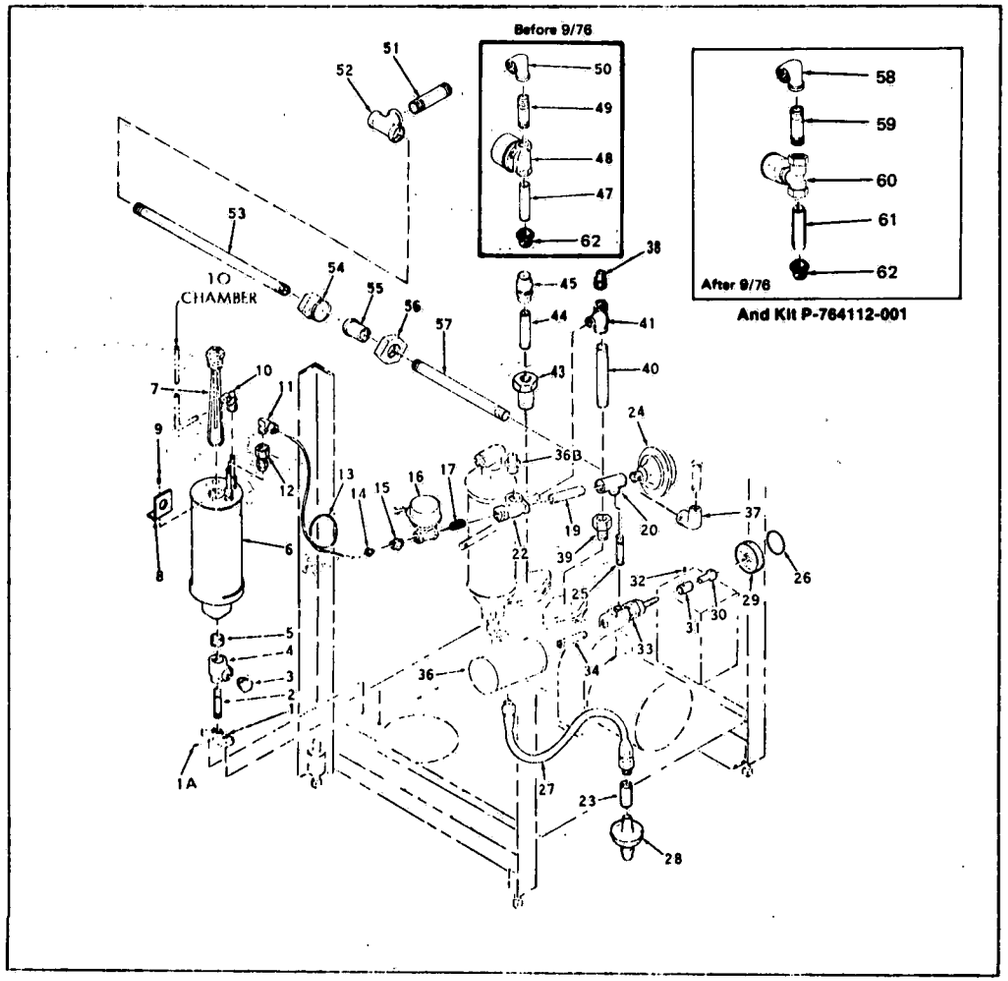


Figure 7-11B. COMMON PIPING: Gas Conditioner, Gas and Vacuum Systems. (Units Shipped After 9/71)

REV. 6/84

F-13

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11B-	P	149812	002	COMMON PIPING: 16 X 16" AND 20 X 20" STERILIZERS	X
1	P	81131	001	SUPPORT	1
1A	P	43308	061	PIN, ROLL (1/8 x 3/4)	1
2	P	81130	001	LEG	1
3	P	3442	091	PIPE PLUG (1/2)	1
4	P	4911	091	TEE (1/2 x 1/4 x 1/2)	1
5	P	29163	044	NIPPLE (1/2 x 1-1/4)	1
6	P	98018	091	GAS CONDITIONER	1
7	P	50565	091	• HEATER	1
8	P	51405	045	BRACKET, Conduit	1
9	P	2792	045	SCREW, Round head (1/4-20 x 1/2)	2
10	P	33555	091	COMPRESSION ELBOW (3/8 ODT)	1
11	P	26181	091	COMPRESSION ELL (1/8 IPS x 1/8 ODT)	1
12	P	30722	044	COMPRESSION COUPLING (3/8 ODT x 1/8 IPS)	1
13	P	89053	091	TUBE (1/8 OD)	1
	P	134061	001	GAS PIPING ASSEMBLY	•
14	P	20344	091	• COMPRESSION FITTING (1/8 IPS x 1/8 ODT)	1
15	P	939	042	• REDUCING BUSHING (1/4 x 1/8)	1
16	P	129289	001	• SOLENOID VALVE	1
	P	764270	001	• • REPAIR KIT	A/R
	P	764270	002	• • COIL, 120 volt	A/R
17	P	28917	091	• NIPPLE (1/4 x 1)	2
18	P	1620	091	• ELL (3/8 x 1/4)	1
19	P	28937	051	• NIPPLE (1/4 x 6)	1
20	P	40018	051	• BASE, Manifold	1
21	P	29020	051	• NIPPLE (3/8 x 2-3/4)	1
22	P	4906	091	• TEE (1/4)	1
23	P	1619	051	• STREET ELL (1/4)	2
24	P	51309	091	• GAUGE (0# to 300#)	1
25	P	28926	091	• NIPPLE (1/4 x 3-1/4)	1
26	P	1618	091	• ELL (1/4)	2
27	P	74070	091	• HOSE ASSEMBLY	1
28	P	50438	045	• INLET	1
29	P	54899	091	• HANDWHEEL	1
30	P	8605	043	• NUT, Handwheel	1
31	P	150520	001	• ADAPTER (1/4-20 UNC) For Units Shipped Before 10/75	1
	P	150520	001	• ADAPTER (#10-24 UNC) For Units Shipped After 10/75	1
32	P	34518	061	• SET SCREW (#8-32 x 1/4)	1
33	P	150519	001	• ANGLE VALVE (1/4-20 UNC) For Units Shipped Before 10/75	1
	P	150519	001	• ANGLE VALVE (#10-24 UNC) For Units Shipped After 10/75	1
34	P	28923	051	• NIPPLE (1/4 x 2-1/2)	1
35	P	28921	091	• NIPPLE (1/4 x 2)	1
36	P	47214	091	• FILTER ASSEMBLY (See figure 7-15)	1
36A	P	4913	091	• TEE (1/4 x 1/4 x 1/8)	1
36B	P	41291	091	• COMPRESSION FITTING (1/4 IPS x 3/16 ODT)	1
36C	P	52723	091	• DECAL, WARNING	1
37	P	1635	091	ELBOW (3/4)	1
38	P	3442	091	PLUG, Pipe (1/2)	1
39	P	828	091	REDUCER (1-1/4 x 3/4)	1
40	P	29315	091	NIPPLE (3/4 x 7-1/4)	1
41	P	4922	091	TEE (3/4 x 1/2 x 1/2)	1
				VACUUM PIPING	•
42				• Not Used	
43	P	828	091	• REDUCER (1-1/4 x 3/4)	1
44	P	76626	091	• SPECIAL NIPPLE (3/4), Short thread up	1
45	P	44317	091	• CHECK VALVE (3/4)	1
46				• NOT USED	

REV. 6/84

F-14

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-11B-47	P	29178	051	• NIPPLE (1/2 x 5)	1
48	P	42286	091	• SOLENOID VALVE (1/2) (See items 58 to 62 and paragraph 6-10)	1
	P	762485	001	• • REPAIR KIT	A/R
	P	752015	091	• • COIL, 120 volt	A/R
49	P	29166	051	• NIPPLE (1/2 x 2)	1
50	P	1625	091	• ELBOW (1/2 x 3/4)	1
51	P	29298	091	• NIPPLE (3/4 x 3)	1
52	P	4925	091	• TEE (3/4 x 1/2 x 3/4)	1
53	P	29320	091	NIPPLE (3/4 x 8-1/2)	1
54	P	1747	091	THREAD END (3/4)	1
55	P	4248	091	SPUD, Female (3/4)	1
56	P	2903	091	UNION NUT	1
57	P	29334	091	NIPPLE (3/4 x 12)	1
	P	764112	001	KIT, ASCO Solenoid Valve (See paragraph 6-10)	1
58	P	1625	091	• ELBOW (3/4 x 1/2)	1
59	P	29177	091	• NIPPLE (1/2 x 4-3/4)	1
60	P	150341	001	• VALVE, Solenoid (1/2)	1
	P	764186	001	• • REPAIR KIT	A/R
	P	764078	002	• • COIL, 120 volt	A/R
61	P	29170	051	• NIPPLE (1/2 x 3)	1
62	P	836	042	• BUSHING, Reducing (1/2 x 3/4)	1

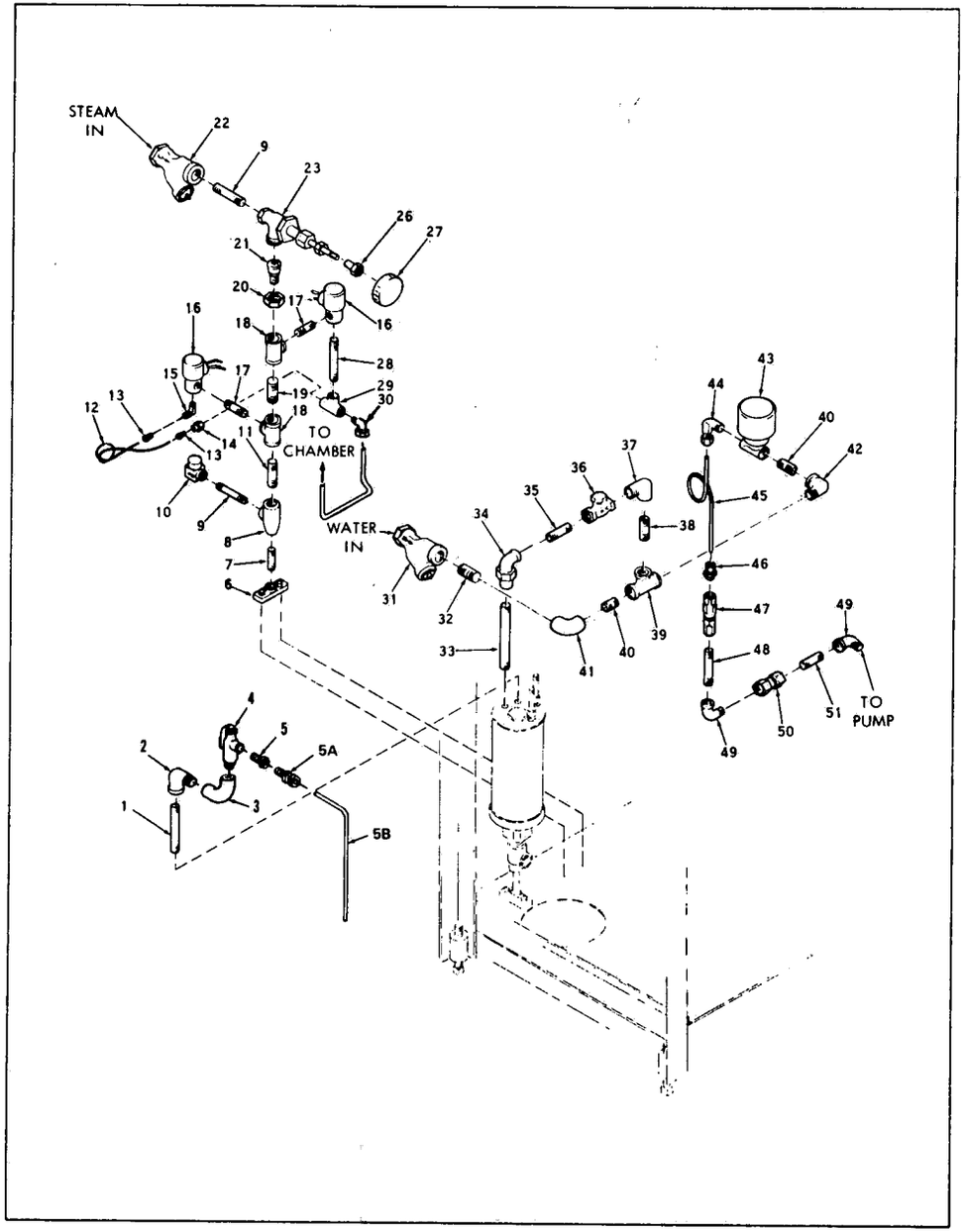


Figure 7-12. COMMON PIPING: Steam and Water Systems.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-12-	P	149812	001	COMMON PIPING: 16 X 16" AND 20 X 20" STERILIZERS ..	X
1	P	28927	091	NIPPLE (1/4 x 3-1/2)	1
2	P	1619	051	STREET ELBOW (1/4)	1
3	P	7461	091	ELBOW (3/4 x 3/8) — See Note	1
4	P	150526	001	SAFETY VALVE (3/4) — See Note	1
5	P	836	042	BUSHING (3/4 x 1/2) — See Note	1
5A	P	20173	091	COMPRESSION FITTING (1/2 NPT x 1/2 ODT) — See Note ..	1
5B	P	81252	001	TUBE, DRAIN (1/2) — See Note	1
	P	96920	091	STEAM SUPPLY PIPING	X
6	P	9613	091	• SUPPORT	1
7	P	50591	091	• LEG	1
8	P	4908	091	• TEE (3/8 x 1/4 x 3/8)	1
9	P	29018	091	• NIPPLE (3/8 x 2-1/4)	2
10	P	41067	091	• TRAP (3/8)	1
11	P	29016	051	• NIPPLE (3/8 x 1-3/4)	1
12	P	89057	091	• TUBING (.093 OD x 12")	1
13	P	47959	091	• FITTING, Capillary Tube	2
14	P	45609	091	• CONNECTOR, Male	1
15	P	46099	091	• ELL (1/4 IPS x 1/4 ODT)	1
16	P	42347	091	• SOLENOID VALVE (1/4)	2
	P	752232	091	• • COIL, 120 volt	A/R
	P	752779	091	• • REPAIR KIT	A/R
17	P	27422	051	• NIPPLE (1/4 x 1-1/4)	2
18	P	4910	091	• TEE (3/8 x 3/8 x 1/4)	2
19	P	29015	051	• NIPPLE (3/8 x 1-1/2)	1
20	P	2901	051	• UNION NUT (3/8)	1
21	P	4076	051	• SPUD, Male (3/8)	1
22	P	47671	091	• STRAINER (3/8)	1
	P	50341	091	• • SCREEN, Monel mesh	1
	P	28447	091	• • GASKET, "O"-Ring	1
23	P	5654	051	• ANGLE VALVE (3/8) (See figure 7-17)	1
24				NOT USED	
25				NOT USED	
26	P	8605	043	• NUT, Handwheel	1
27	P	54899	091	• HANDWHEEL	1
27A	P	90322	091	• DECAL (STEAM SUPPLY)	1
28	P	28925	091	• NIPPLE (1/4 x 3)	1
29	P	4906	091	• TEE (1/4)	1
30	P	46365	091	• COMPRESSION COUPLING (1/4 IPS x 3/8 ODT)	1
	P	96906	091	WATER PIPING	X
31	P	47670	091	• STRAINER (3/8)	1
				• • SCREEN, Monel mesh	1
	P	28447	091	• • GASKET, "O"-Ring	1
32	P	29014	051	• NIPPLE (3/8 x 1-1/4)	1
33	P	29028	051	• NIPPLE (3/8 x 4-3/4)	1
34	P	89153	091	• UNION ELL (3/8)	1
35	P	29016	051	• NIPPLE (3/8 x 1-3/4)	1
36	P	5424	091	• CHECK VALVE (3/8)	1
37	P	1631	091	• STREET ELL (3/8)	1
38	P	29015	051	• NIPPLE (3/8 x 1-1/2)	1
39	P	4909	091	• TEE (1/4 x 1/4 x 3/8)	1
40	P	28917	091	• NIPPLE (1/4 x 1)	2
41	P	1620	091	• ELL (3/8 x 1/4)	1
42	P	1619	051	• STREET ELL (1/4)	1
43	P	129289	001	• SOLENOID VALVE	1
	P	764270	001	• • REPAIR KIT	A/R
	P	764270	002	• • COIL, 120 volt	A/R
44	P	41306	091	• COMPRESSION ELL (1/4 IPS x 1/4 ODT)	1
45	P	NLA		TUBE (1/4 OD)	1
46	P	34218	091	COMPRESSION FITTING (1/4 IPS x 1/4 ODT)	1
47	P	42094	061	CHECK VALVE	1
48	P	28923	051	NIPPLE (1/4 x 2-1/2)	1
49	P	1619	051	STREET ELL (1/4)	2
50	P	89018	091	FLOW CONTROL VALVE (1/4)	1
51	P	27422	051	NIPPLE (1/4 x 1/4)	1

NOTE: For units with a 3/8" Safety Valve order kit No. P-755226-001 thereafter individual parts may be ordered.

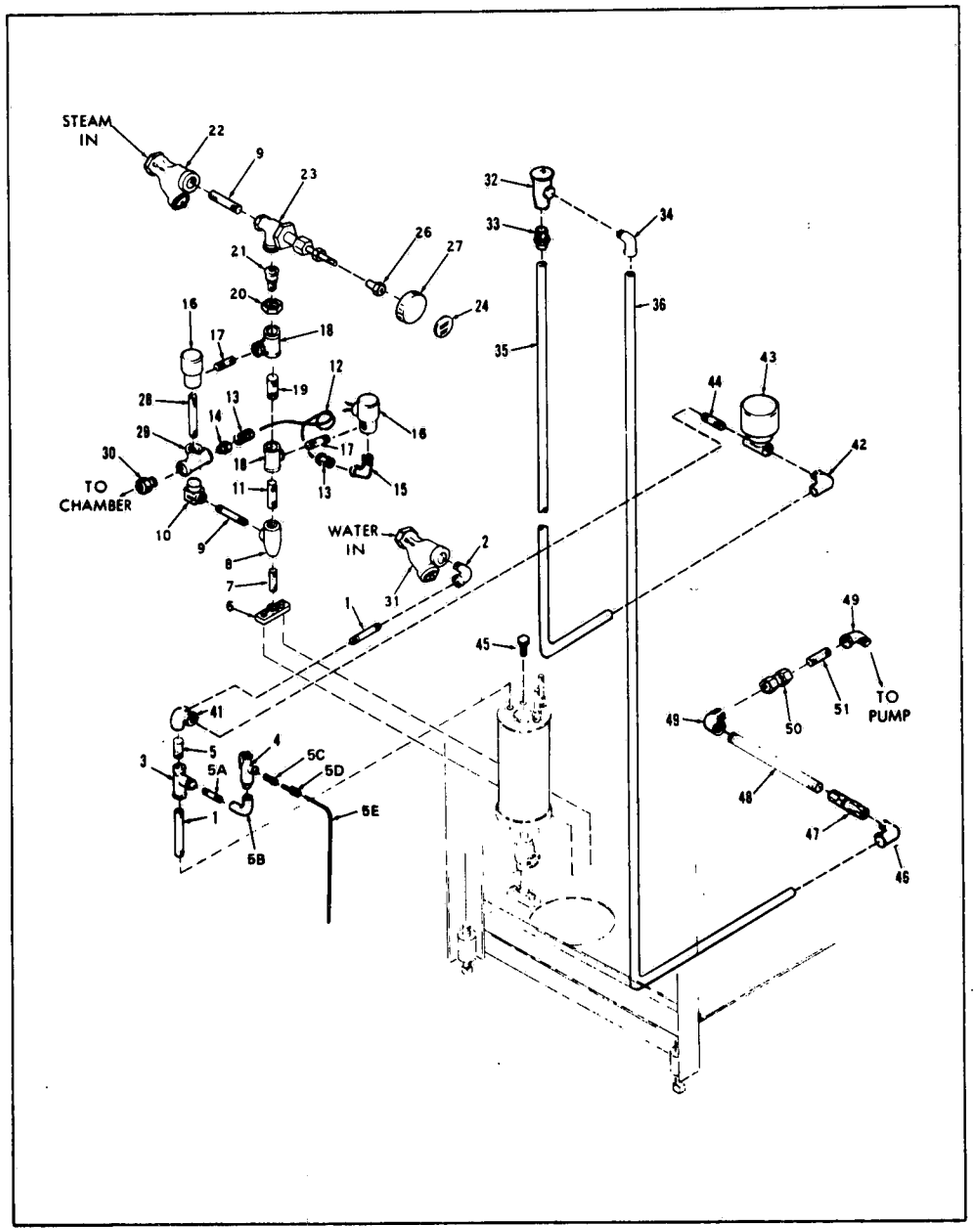


Figure 7-12A. COMMON PIPING: Steam and Water Systems (Units Shipped After 8/70)

REV. 4/79

FIG. & INDEX NO.	PART NUMBER		DESCRIPTION	UNITS PER ASSEMBLY
7-12A-	P 149812	001	COMMON PIPING: 16 X 16" AND 20 X 20" STERILIZERS	X
1	P 29018	091	NIPPLE (3/8 x 2-1/4)	2
2	P 1631	091	STREET ELBOW (3/8)	1
3	P 4928	091	TEE (3/8)	1
4	P 763710	001	SAFETY VALVE (3/4)	1
5	P 25963	091	NIPPLE, Solid (3/8 x 1-1/4)	1
5A	P 29013	051	NIPPLE (3/8 x 1)	1
5B	P 7461	091	ELBOW (3/8)	1
5C	P 836	042	BUSHING (3/4 x 1/2)	1
5D	P 20173	091	COMPRESSION FITTING (1/2 ODT x 1/2 IPS)	1
5E	P 81252	001	TUBE, DRAIN (1/2)	1
	96920	091	STEAM SUPPLY PIPING	X
6	P 9613	091	• SUPPORT	1
7	P 50591	091	• LEG	1
8	P 4908	091	• TEE (3/8 x 1/4 x 3/8)	1
9	P 29018	091	• NIPPLE (3/8 x 2-1/4)	2
10	P 41067	091	• TRAP (3/8)	1
11	P 29016	051	• NIPPLE (3/8 x 1-3/4)	1
12	P 89057	091	• TUBING (.093 OD x 12")	1
13	P 47959	091	• FITTING, Capillary Tube	2
14	P 45609	091	• CONNECTOR, Male	1
15	P 46099	091	• ELL (1/4 IPS x 1/4 ODT)	1
16	P 42347	091	• SOLENOID VALVE (1/4)	2
	P 752232	091	• • COIL, 120 volt	A/R
	P 752779	091	• • REPAIR KIT	A/R
17	P 27422	051	• NIPPLE (1/4 x 1-1/4)	2
18	P 4910	091	• TEE (3/8 x 3/8 x 1/4)	2
19	P 29015	051	• NIPPLE (3/8 x 1-1/2)	1
20	P 2901	051	• UNION NUT (3/8)	1
21	P 4076	051	• SPUD, Male (3/8)	1
22	P 47671	091	• STRAINER (3/8)	1
	P 50341	091	• • SCREEN, Monel mesh	1
23	P 5654	051	• ANGLE VALVE (3/8) (See figure 7-17)	1
24	P 90322	091	• DECAL, "STEAM SUPPLY"	1
25			• Not Used	
26	P 8605	043	• NUT, Handwheel	1
27	P 54899	091	• HANDWHEEL	1
28	P 28925	091	• NIPPLE (1/4 x 3)	1
29	P 4906	091	• TEE (1/4)	1
30	P 46365	091	• COMPRESSION COUPLING (1/4 IPS X 3/8 ODT)	1
31	P 47670	091	STRAINER (3/8)	1
	P 750181	091	• SCREEN, Monel mesh	1
	P 28447	091	• GASKET, "O"-Ring	1
	P 97197	001	VACUUM BREAKER ASSEMBLY	X
32	P 90233	091	• VACUUM BREAKER (3/8)	1
	P 752477	091	• • REPAIR KIT	A/R
33	P 90587	091	• ADAPTER (3/8 IPS x 1/2 ODT)	1
34	P 90240	091	• ELBOW (3/8 IPS x 1/2 ODT)	1
35	P 81053	001	• TUBE, Inlet (1/2 ODT)	1
36	P 81054	001	• TUBE, Outlet (1/2 ODT)	1
37-40			Not Used	
41	P 1623	091	ELBOW, Side Outlet (3/8 x 3/8 x 1/4)	1
42	P 89740	091	ELBOW (1/4 IPS x 1/2 ODT)	1
43	P 129289	001	SOLENOID VALVE	1
	P 764270	001	• • REPAIR KIT	A/R
	P 764270	002	• • COIL, 120 volt	A/R
44	P 27422	051	NIPPLE (1/4 x 1-1/4)	1
45	P 3441	091	PLUG, Pipe (3/8)	1
46	P 89740	091	ELL (1/4 IPS x 1/2 ODT)	1
47	P 42094	061	CHECK VALVE	1
48	P 28945	091	NIPPLE (1/4 x 8)	1
49	P 1619	061	STREET ELL (1/4)	2
50	P 89018	091	FLOW CONTROL VALVE (1/4)	1
51	P 28923	051	NIPPLE (1/4 x 2-1/2)	1

†Field service replacement kit Q-755226-001.

REV. 6/84

G-5

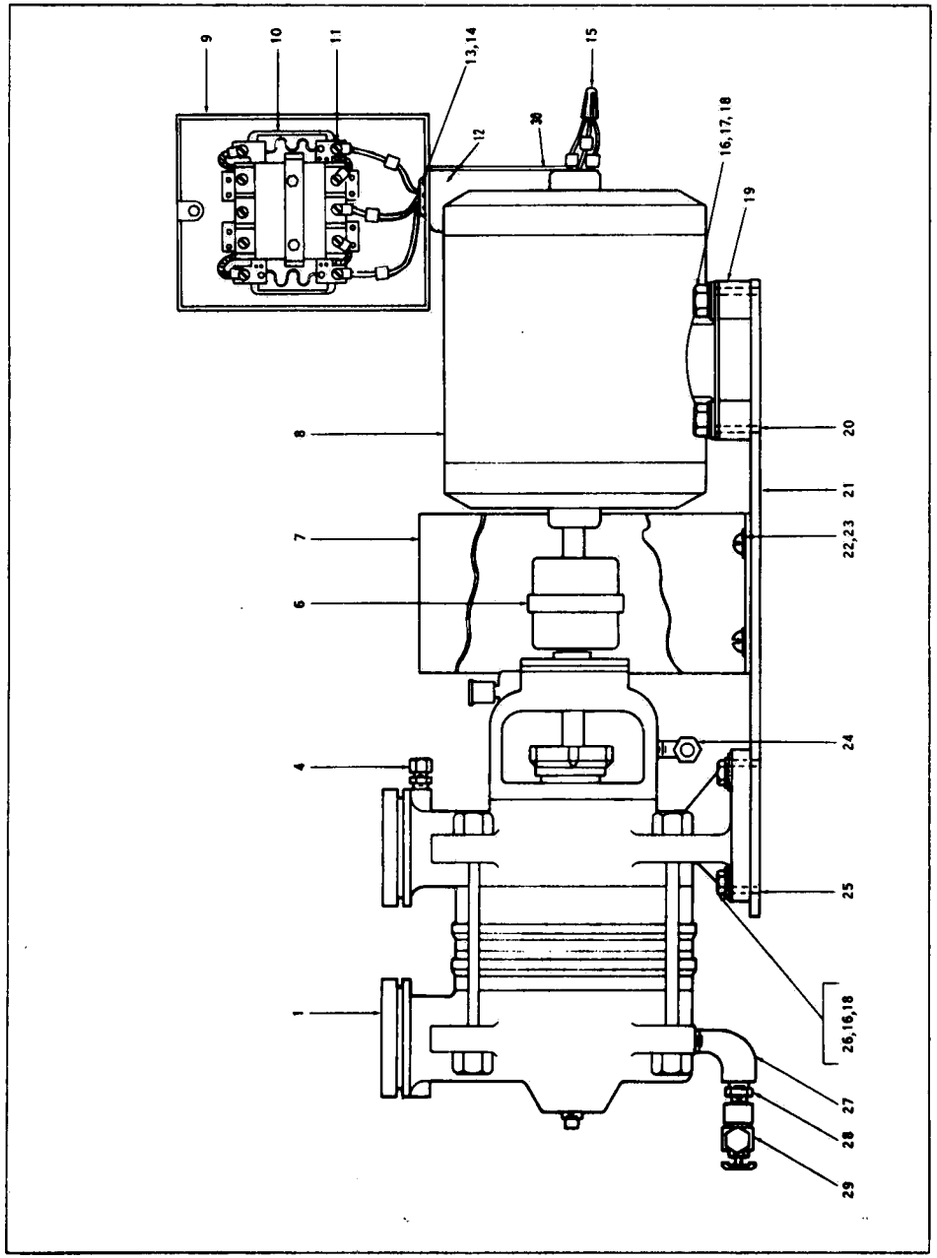


Figure 7-13. MOTOR AND PUMP ASSEMBLY.

REV. 4/79

G-6

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-13-	P	134127	002	MOTOR AND PUMP ASSEMBLY, 200 Volt, 60 Hz, 3 Phase	X		
	P	134127	001	MOTOR AND PUMP ASSEMBLY, 230 Volt, 60 Hz, 3 Phase		X	
1	P	89009	091	VACUUM PUMP (See figure 7-14 for packing and other parts) ..	1	1	
2				Not Used			
3				Not Used			
4	P	34218	091	COMPRESSION FITTING (1/4 IPS x 1/4 ODT)	1	1	
5				Not Used			
6	P	89005	091	COUPLING	1	1	
7	P	50651	045	GUARD	1	1	
8	P	150228	001	MOTOR, 1 hp, 200 volt (Less overload heaters) — See Note	1		
	P	79829	001	MOTOR, 1 hp, 230 volt (Less overload heaters) — See Note		1	
9	P	92678	001	STARTER	1	1	
10	P	150057	001	OVERLOAD HEATER, For use with 1-hp motors	3		
	P	82745	001	OVERLOAD HEATER, For use with 1-hp motors		3	
	P	89011	091	OVERLOAD HEATER, For use with existing 3/4-hp motors only	A/R	A/R	
11	P	14592	091	TERMINAL CONNECTOR	3	3	
12	P	23345	091	JUNCTION BOX	1	1	
13	P	91702	091	NIPPLE, Chase	1	1	
14	P	8681	091	LOCKNUT	2	2	
15	P	17691	091	WIRE NUT (#12-18)	4	4	
16	P	19679	041	LOCKWASHER (5/16)	8	8	
17	P	3851	042	SCREW, Hex head (5/16-18 x 1-1/4)	4	4	
18	P	17250	042	FLAT WASHER (5/16)	8	8	
19	P	89007	045	BAR, Motor support	2	2	
	P	89006	061	SHIM, Motor (Not shown)	2	2	
20	P	46197	061	ROLL PIN (1/8 Diameter x 1-1/2)	2	2	
21	P	89008	010	BASE	1	1	
22	P	15324	042	SCREW, Round head (1/4-20 x 3/8)	4	4	
23	P	19678	045	LOCKWASHER (1/4)	4	4	
24	P	46366	091	ELL FITTING (1/4 NPT x 3/8 ODT)	1	1	
25	P	24700	061	GROOVE PIN (3/16 Diameter x 1)	2	2	
26	P	3900	048	SCREW, Hex head (5/16-18 x 1)	4	4	
27	P	1619	051	STREET ELBOW (1/4)	1	1	
28	P	939	042	REDUCING BUSHING (1/4 x 1/8)	1	1	
29	P	6758	044	VALVE, Air bleed (1/8 IPS x 5/16 ODT)	1	1	
30	P	23346	091	COVER, Junction Box	1	1	
	P	37774	091	NIPPLE, Chase (Junction box to motor — not shown)	1	1	

NOTE: Check motor nameplate before ordering. If horsepower rating is 3/4, overload heaters (Index No. 10) must also be replaced. Order two heaters, Part 49348-91.

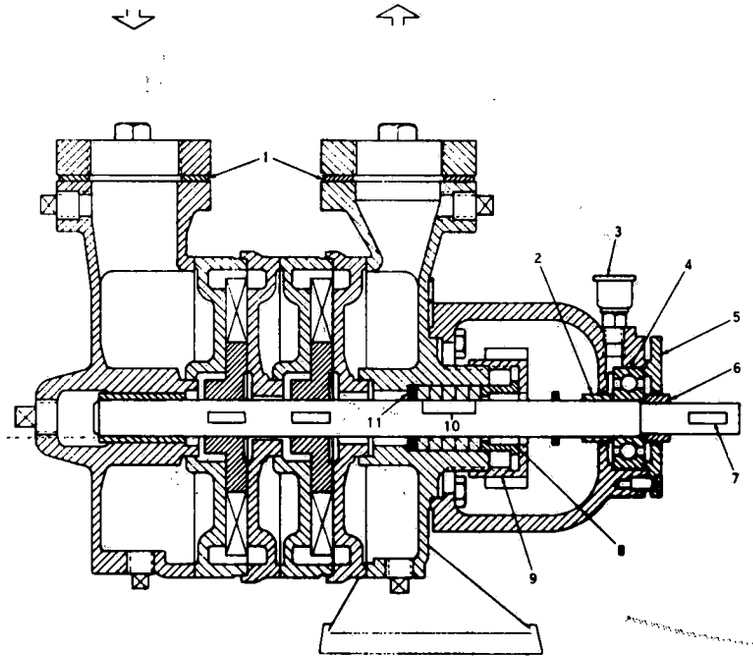


Figure 7-14. VACUUM PUMP.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-14-	89009-91	VACUUM PUMP	X
1	753634-91	GASKET	2
2	76950-91	DISTANCE PIPE	1
3	76951-91	GREASE CUP	1
4	76952-91	ROLLER BEARING	1
5	76953-91	BEARING COVER	1
6	76954-91	DISTANCE PIPE	1
7	76955-91	WOODRUFF KEY	1
8	76956-91	GLAND SPACER	1
9	76957-91	GLAND NUT	1
10	80936-91	GLAND PACKING RING	1
11	76959-91	NECK RING (Bottom)	1

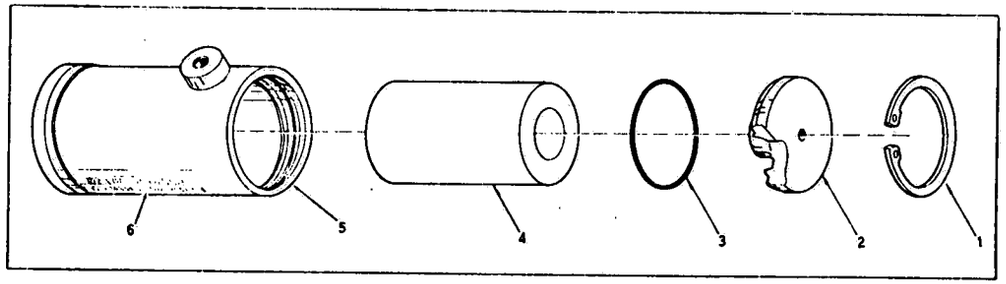


Figure 7-15. GAS FILTER ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-15-	47214-91	GAS FILTER ASSEMBLY	X
1	47207-91	SNAP RING	1
2	47209-45	COVER PLATE	1
3	47208-91	"O" RING	1
4	47206-91	FILTER ELEMENT	1
5	47213-45	BODY	1
6	79746-001	LABEL, Identification	1

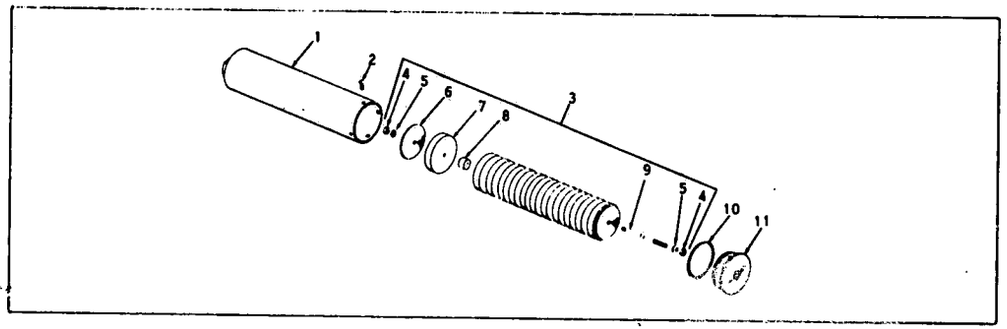


Figure 7-16. AIR FILTER ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-16-	41319-91	AIR FILTER ASSEMBLY: (BACTERIA RETENTIVE)	X
1	41320-42	TUBE ASSEMBLY	1
2	12283-41	MACHINE SCREW, Round head (#10-32 x 1/4)	4
3	23953-91	CARTRIDGE ASSEMBLY	1
4	3037-41	. HEX NUT (#6-32)	2
5	5508-41	. WASHER, Bevel	2
6	24032-61	. SCREEN	17
7	22554-91	. DISC	16
8	23929-01	. SPACER, Rubber	16
9	23952-01	. ROD	1
10	41301-91	"O" RING	1
11	41323-42	HEAD	1

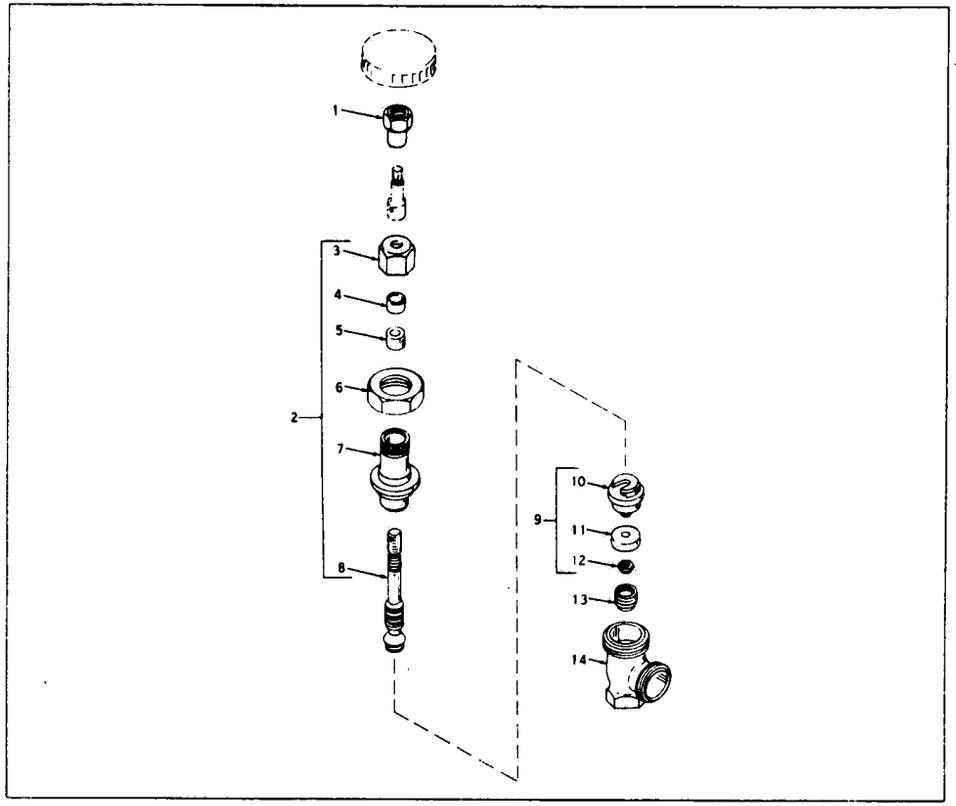


Figure 7-17. UNION ANGLE VALVE.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-17-	P	5654	061	UNION ANGLE VALVE (3/8 INCH)	X
1	P	8606	043	NUT, Wheel	1
2	P	53915	091	VALVE STEM AND BONNET ASSEMBLY	1
3	P	48431	051	• NUT, Packing	1
4	P	48432	091	• GLAND, Packing	1
5	P	8784	091	• PACKING	1
6	P	5683	051	• NUT, Bonnet	1
7	P	53912	051	• BONNET, Valve	1
8	P	53911	051	• STEM, Valve	1
9	P	25347	091	DISC HOLDER ASSEMBLY	1
10	P	150576	001	• DISC HOLDER	1
11	P	25345	091	• DISC, Teflon	1
12	P	5680	091	• NUT, Disc	1
13	P	5685	061	SEAT, Valve	1
14	P	5669	061	BODY, Valve	1

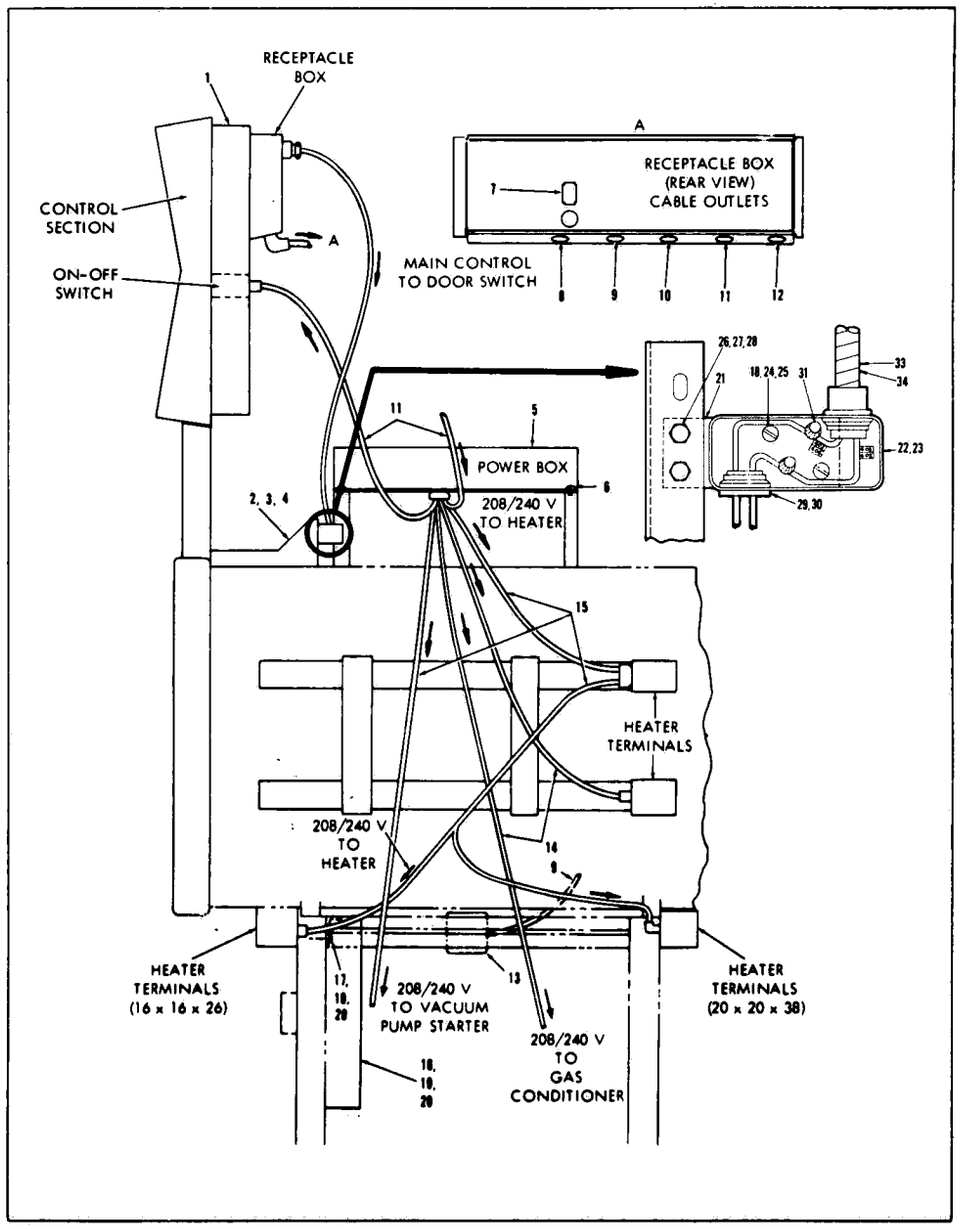


Figure 7-18. CONTROL PACKAGE.

FIG.& INDEX NO.		PART NUMBER		DESCRIPTION	UNITS PER ASSEMBLY			
7-18-	P	149791	091	CONTROL PACKAGE: 16" x 16" x 26"	X			
	P	149793	091	CONTROL PACKAGE: 20" x 20" x 38" Single Door		X		
	P	149793	002	CONTROL PACKAGE: 20" x 20" x 38" Double Door			X	
1	P	149820	091	CONTROL ASSEMBLY (See figure 7-19)	1			
	P	149821	091	CONTROL ASSEMBLY (See figure 7-19)		1	1	
2	P	139624	091	DOOR SWITCH ASSEMBLY For Units Shipped Before 9/76 (See figure 7-24)	1	1		
		134319	001	DOOR SWITCH ASSEMBLY For Units Shipped After 9/76 (See Figure 7-24A)	1	1	1	
3	P	90891	045	EXTENSION, Switch arm	1	1	1	
4	P	12534	061	SCREW, Socket head (#8-32 x 1 1/4)	2	2	2	
5	P	98261	091	POWER BOX ASSEMBLY (See figure 7-23)	1	1	1	
	R	3500	567	TUBE, Insulating (Not Shown)	A/R	A/R	A/R	
6	P	15361	042	SCREW, Round head (#10-32 x 1/4)	6	6	6	
7	P	96238	091	CABLE ASSEMBLY, Main control to door switch (See figure 7-24)				
8	P	134318	001	CABLE ASSEMBLY, Rotary switch (See figure 7-20)				
9	P	96946	091	CABLE ASSEMBLY, Receptacle box to solenoid valves (See figure 7-20)				
10	P	55243	091	CABLE ASSEMBLY, Pressure-Temperature switch (See figure 7-20)				
11	P	96894	091	CABLE ASSEMBLY, Power box (See figure 7-20)				
12	P	96898	091	CABLE ASSEMBLY, Switches (See figure 7-20)				
13	P	98287	091	CABLE ASSEMBLY, Switch assembly to solenoids (See figure 7-28)	1	1	1	
14	P	96923	091	CABLE ASSEMBLY, Power box to heaters and gas conditioner	1	1	1	
15	P	98258	091	CABLE ASSEMBLY, Power box to pump and heaters	1	1	1	
16	P	134022	091	TEMPERATURE-PRESSURE SWITCH ASSEMBLY (See figure 7-22)	1	1	1	
17	P	79387	061	BRACE	1	1	1	
18	P	2959	041	NUT, Hex (#10-32)	3	3	5	
19	P	79385	045	SPACER	2	2	2	
20	P	12541	061	SCREW, Round head (#10-32 x 1)	2	2		
	P	9315	041	SCREW, Round head (#10-32 x 1 1/4)	2	2	2	
21	P	82429	001	SUPPORT	1	1	2	
22	P	23345	091	BOX, Junction	1	1	2	
23	P	23346	091	COVER, Box	1	1	2	
24	P	9374	041	SCREW, Round Head, 10-32 x 3/8 Lg.	2	2	4	
25	P	46115	091	LOCKWASHER, #10	2	2	4	
26	P	81667	015	SCREW, Hex Hd., 1/4-20 x 3/4 Lg	2	2	4	
27	P	19678	045	LOCKWASHER, 1/4	2	2	4	
28	P	3097	041	NUT, Hex, 1/4-20	2	2	4	
29	P	91702	091	NIPPLE, Chase	1	1	2	
30	P	8681	091	LOCKNUT	1	1	2	
31	P	18538	091	NUT, Wire	2	2	4	
32	P	92498	001	HEATER, Strip (Not Shown)	1	1	2	
33	P	92499	001	CABLE ASSEMBLY, Heater	1	1		
34	P	92499	002	CABLE ASSEMBLY, Heater			1	

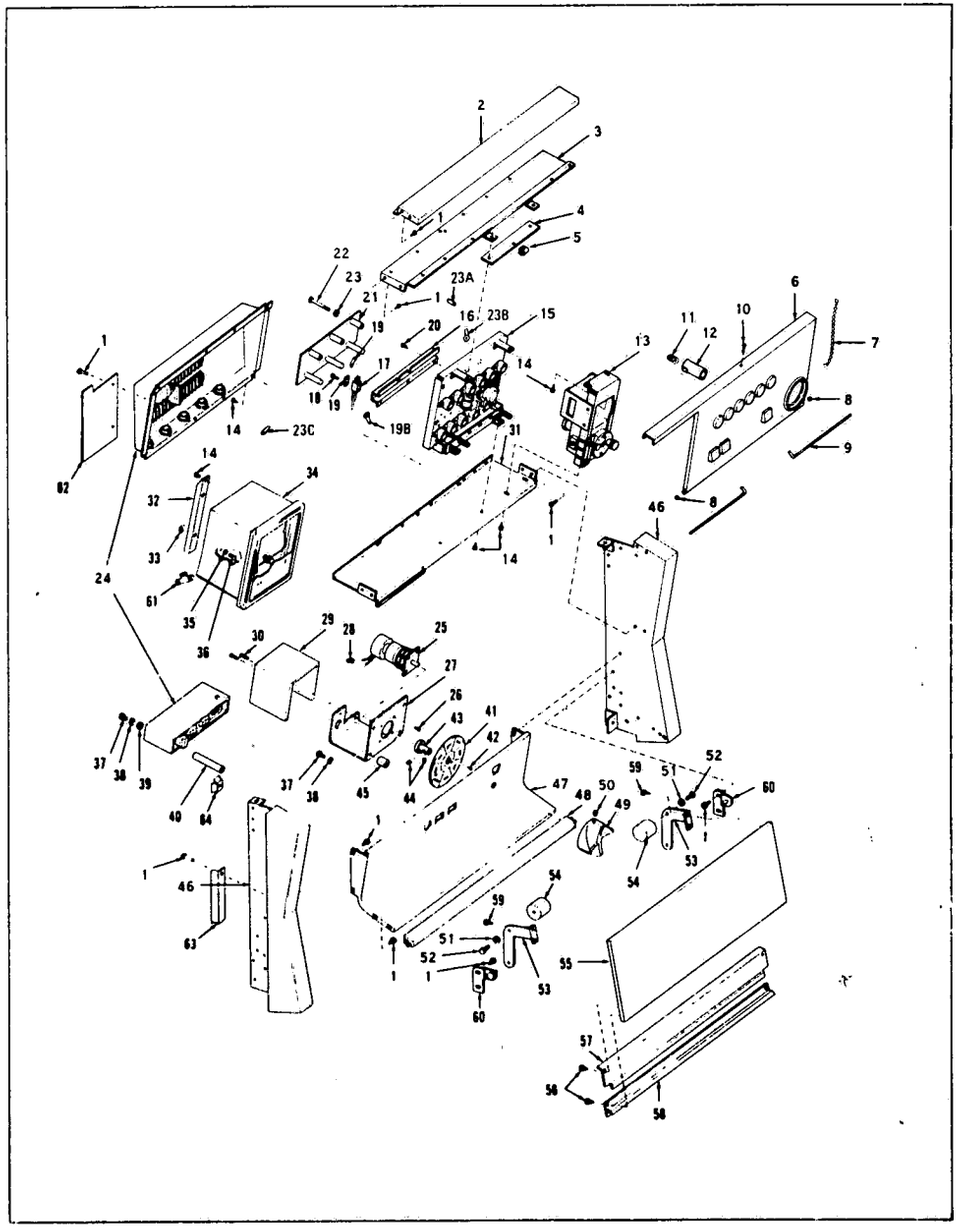


Figure 7-19. CONTROL ASSEMBLY.

AMSCO SERVICE

MEDALLION SERIES
CRYOTHERM® STERILIZER
P-754215-002

6/84

1 of 2

FIG.& INDEX NO.	PART NUMBER		DESCRIPTION	UNITS PER ASSEMBLY			
7-19-	P 149820	091	CONTROL ASSEMBLY: 16" x 16" x 26"	X			
	P 149821	091	CONTROL ASSEMBLY: 20" x 20" x 38"		X		
1	P 90170	045	SCREW, Self tapping	30	32		
2	P 96053	010	PANEL, Top trim	1			
	P 96054	010	PANEL, Top trim		1		
3	P 90738	031	PANEL, Instrument retaining	1			
	P 90739	031	PANEL, Instrument retaining		1		
4	P 51089	045	BAR, Support	1	1		
5	P 91000	045	SPEED NUT	1	1		
6	P 139995	091	PANEL ASSEMBLY (See figure 7-25)	1			
	P 139993	091	PANEL ASSEMBLY (See figure 7-25)		1		
7	P 90410	091	CHAIN, Bead	1	1		
8	P 90110	091	SPACER, Control panel	2	2		
9	P 90063	061	ROD, Pivot	2	2		
10	P 51088	061	SCREW, Flat head (#10-24 x 1-1/4)	1	1		
11	P 48111	091	LAMP	7	7		
12	P 90345	040	SHIELD	7	7		
13	P 139984	091	TIMER ASSEMBLY (See figure 7-26)	1	1		
14	P 90168	045	SCREW, Self tapping	22	30		
	P 149789	091	RECEPTACLE ASSEMBLY	X	X		
15	P 139986	091	• CONTROL PANEL SWITCH ASSEMBLY (See figure 7-21)	1	1		
	P 98260	091	• MOUNTING ASSEMBLY, Switch	X	X		
16	P 96056	045	• • BRACKET, Switch mounting	1	1		
17	P 90319	091	• • LEAF SWITCH	3	3		
18	P 26034	045	• • SCREW, Round head (#5-40 x 1)	6	6		
19	P 90337	091	• • PLATE, Tension	3	3		
19A	P 78629	091	• • SLEEVE, Insulation	6	6		
19B	P 90619	091	• • TERMINAL, Wire	4	4		
20	P 24910	061	• SCREW, Self tapping	5	5		
21	P 96775	091	• COVER ASSEMBLY	1	1		
22	P 22419	041	• SCREW, Machine	3	3		
23	P 19684	061	• LOCKWASHER	3	3		
23A	P 78629	091	• SLEEVE, Insulation	5	5		
23B	P 90619	091	• TERMINAL, Wire	30	30		
23C	P 43603	091	• JUMPER	1	1		
24	P 149789	091	• POWER SWITCH RECEPTACLE ASSEMBLY (See figure 7-20)	1	1		
	P 139983	091	• • ROTARY SWITCH ASSEMBLY	X	X		
25	P 96910	091	• • • SOLENOID SELECTOR SWITCH — See Note	1	1		
	P 139983	091	• • • SOLENOID SELECTOR SWITCH,Factory Wired–See Note	1	1		
26	P 4672	041	• • • SCREW, Round head (#6-32 x 5/16)	4	4		
27	P 139985	031	• • • BRACKET, Rotary switch	1	1		
28	P 18538	091	• • • CONNECTOR, Parallel	2	2		
29	P 149824	031	• • • COVER, Rotary switch	1	1		
30	P 23437	041	• • • SCREW, Round	2	2		
31	P 139512	010	PANEL, Instrument support	1			
	P 139517	010	PANEL, Instrument support		1		

NOTE: Order either P-96910-091 or P-139983-091. P-96910-091 if switch that is not factory wired is desired.
The motor cannot be replaced because of difficulty in reassembling. Service Company recommends P-139983-091.

FIG.& INDEX NO.	PART NUMBER		DESCRIPTION	UNITS PER ASSEMBLY			
7-19-	P 91922	045	RECORDER MOUNT ASSEMBLY	X	X		
32	P 91001	045	• RECORDER MOUNT	1	1		
33	P 91924	091	• NUT, Speedgrip	2	2		
34	P 55329	091	RECORDER (See figure 7-27)	1	1		
35	P 19678	045	LOCKWASHER	2	2		
36	P 4000	042	SCREW, Round head	2	2		
37	P 78378	091	SCREW, Machine (#10-32 x 3/8)	9	9		
38	P 19685	061	LOCKWASHER	6	6		
39	P 5511	091	WASHER	2	2		
40	P 90585	091	POST	2	2		
41	P 96922	010	INDICATOR DISC	1	1		
42	P 13334	091	SCREW, Round head (#4-40 x 3/8)	3	3		
43	P 89041	091	BUSHING, Indicator disc	1	1		
44	P 51176	091	SCREW, Socket set (#8-32 x 1/8)	2	2		
45	P 90144	091	STAND-OFF, Plate	4	4		
46	P 99832	001	TRIM, Instrument panel, right hand	1	1		
	P 99833	001	TRIM, Instrument panel, left hand	1			
47	P 96938	010	VALVE PANEL	1			
	P 96942	010	VALVE PANEL		1		
48	P 90090	091	TRIM BAR ASSEMBLY	1			
	P 90167	091	TRIM BAR ASSEMBLY		1		
49	P 98413	095	KNOB	1	1		
50	P 10583	091	SCREW, Socket set (#10-32 x 3/16)	2	2		
	P 96071	091	VALVE PANEL DOOR ASSEMBLY	X			
	P 96070	091	VALVE PANEL DOOR ASSEMBLY		X		
51	P 19685	061	• LOCKWASHER	2	2		
52	P 41805	044	• CAPSCREW	2	2		
53	P 90071	091	• HINGE, Valve panel door, right-hand	1	1		
	P 90072	091	• HINGE, Valve panel door, left-hand	1	1		
54	P 90203	045	• WEIGHT, Counter balance	2	2		
55	P 96051	010	• DOOR, Valve panel	1			
	P 96052	010	• DOOR, Valve panel		1		
56	P 90169	045	• SCREW, Self tapping	2	2		
57	P 90068	031	• DOOR STOP	1			
	P 90075	031	• DOOR STOP		1		
58	P 90067	033	• HANDLE, Finger grip	1			
	P 90073	033	• HANDLE, Finger grip		1		
59	P 90168	045	• SCREW, Self-tapping	6	6		
60	P 90076	061	BRACKET, Hinge, right hand	1	1		
	P 90077	061	BRACKET, Hinge, left hand	1	1		
61	P 41276	091	TEE, Compression	1	1		
62	P 79097	031	EXTENSION, Box		1		
63	P 89422	061	RETAINER, Spring seal	2	2		
64	P 89479	061	CLAMP, Spring seal	2	2		

NOTE: Order either P-96910-091 or P-139983-091. P-96910-091 if switch that is not factory wired is desired.
The motor cannot be replaced because of difficulty in reassembling. Service Company recommends P-139983-091.

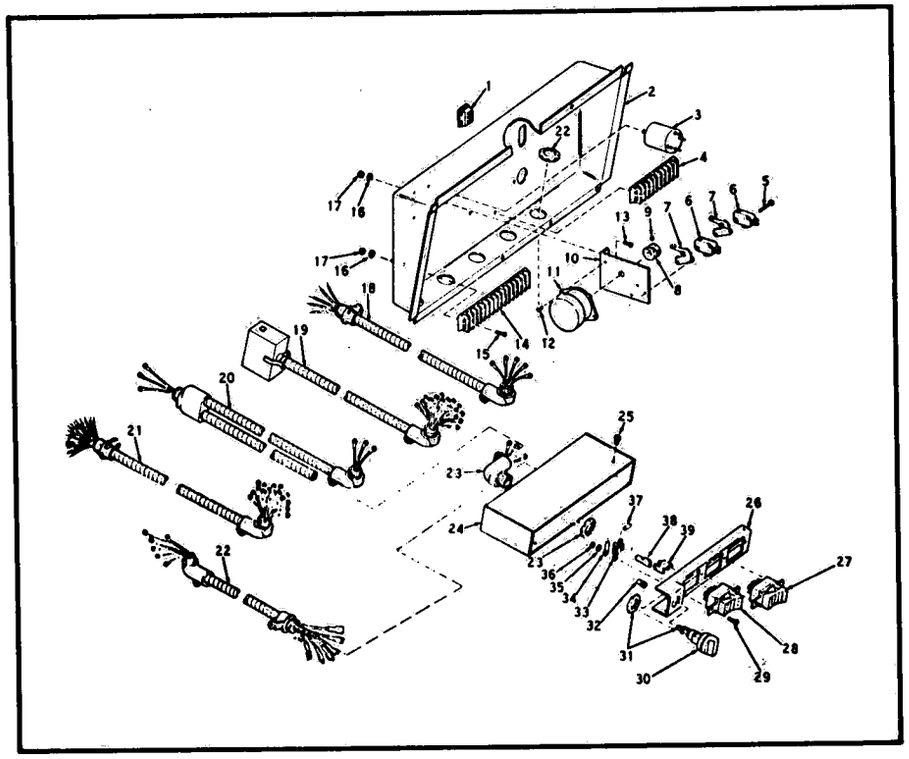


Figure 7-20. RECEPTACLE ASSEMBLY: Power Switch.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-20-	P	149789	091	RECEPTACLE ASSEMBLY: POWER SWITCH	X
1	P	79427	091	RECEPTACLE	1
2	P	139988	031	BOX, Receptacle	1
3	P	79747†	001	RECTIFIER	1
4	P	40830	091	TERMINAL STRIP	1
	P	41266	091	PULSE TIMER	X
5	P	29811	091	• SCREW, Round head	2
6	P	29804	091	• MICROSWITCH	2
7	P	30745	091	• ROLLER	2
8	P	41267	091	• CAM	1
9	P	27429	091	• SETSCREW	1
10	P	41268	045	• BRACKET	1
11	P	41269	091	• TIMER MOTOR	1
12	P	17659	041	• SCREW, Round head	2
13	P	12531	061	SCREW, Round head	4
14	P	41560	091	TERMINAL STRIP	2
15	P	3960	041	SCREW, Round head	6
16	P	19684	061	WASHER	10
17	P	8644	061	HEX NUT	10
18	P	96946	091	CABLE ASSEMBLY, Receptacle box to solenoid valves	1
19	P	55243	091	CABLE ASSEMBLY, Pressure-temperature switch	1
20	P	96894	091	CABLE ASSEMBLY, Power box	1
21	P	134318	001	CABLE ASSEMBLY, Rotary switch — For Units Shipped Before 9/76	1
	P	134318	001	CABLE ASSEMBLY, Rotary switch — For Units Shipped After 9/76	1
22	P	96898	091	CABLE ASSEMBLY, Switches	1
	P	96897	091	SWITCH ASSEMBLY	X
23	P	90625	091	• CONNECTOR, 90° Flexible conduit	2
24	P	96918	091	• COVER ASSEMBLY	1
25	P	90170	045	• SCREW, Self tapping (#8-32 x 5/16)	2
26	P	89037	091	• BRACKET ASSEMBLY, Fuse and power switch	1
27	P	89033	091	• SWITCH, Manual-automatic	1
28	P	90624	091	• POWER SWITCH, On-off	1
29	P	4672	041	• SCREW, Round head (#6-32 x 5/16)	3
30	P	118142	091	• FUSE (5 amp)	1
31	P	90656	091	• FUSE HOLDER	1
32	P	18538	091	• CONNECTOR, Parallel	1
33	P	89709	001	• LUG STRIP	1
34	P	14865	091	• WIRE TERMINAL	4
35	P	19684	061	• LOCKWASHER	3
36	P	3037	041	• HEX NUT (#6-32)	3
37	P	89191	091	• RESISTOR	1
38	P	32119	091	• CONNECTOR, Spade	8
39	P	32118	091	• ADAPTER	2
	P	139983	091	• ROTARY SWITCH ASSEMBLY (Not Shown - see figure 7-19)	1

†**Note:** Should the old-style rectifier (P-74168-091, requires soldering connections) require replacement, order Rectifier (P-79747-001), three Terminals (P-90695-091) and one Terminal (P-32119-091).

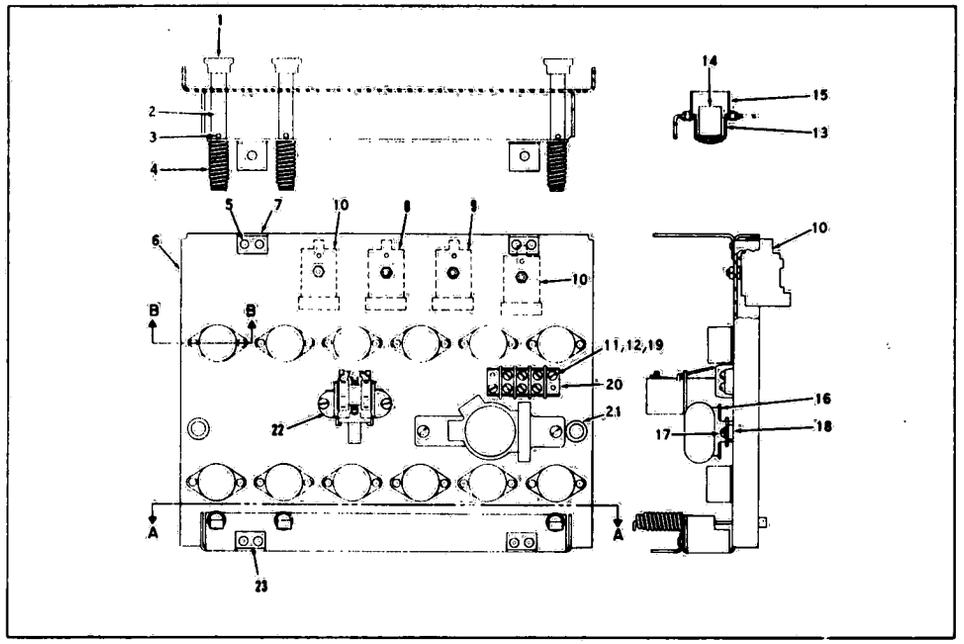


Figure 7-21. CONTROL PANEL SWITCH ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-21-	P	139986	091	CONTROL PANEL SWITCH ASSEMBLY	X
1	P	90098	091	INSULATOR, Nylon	3
2	P	90626	045	ACTUATOR, Switch	3
3	P	90348	061	ROLL PIN	3
4	P	90093	061	SPRING, Switch	3
5	P	90327	045	RIVET, Semi-tubular	32
6	P	139518	045	PANEL, Switch support	1
7	P	90329	045	BRACKET, Switch support panel	2
8	P	41295	091	RELAY (3 pole)	1
9	P	41294	091	RELAY (2 pole)	1
10	P	37606	091	RELAY (1 pole)	2
11	P	3037	041	HEX NUT	2
12	P	19684	061	LOCKWASHER	2
13	P	90465	091	SOCKET, Lamp	12
14	P	90466	091	SLEEVE, Lamp socket	12
15	P	90344	040	BASE, Shield	12
16	P	79739	001	BUZZER	1
17	P	24910	061	SCREW, Round head	4
18	P	24488	091	WASHER, Plain	2
19	P	3960	041	SCREW, Round head	2
20	P	90699	091	STRIP, Terminal barrier	1
21	P	77797	091	BUSHING, Snap	2
22	P	51090	091	RELAY, Buzzer	1
23	P	90328	045	BRACKET, Switch support panel	2

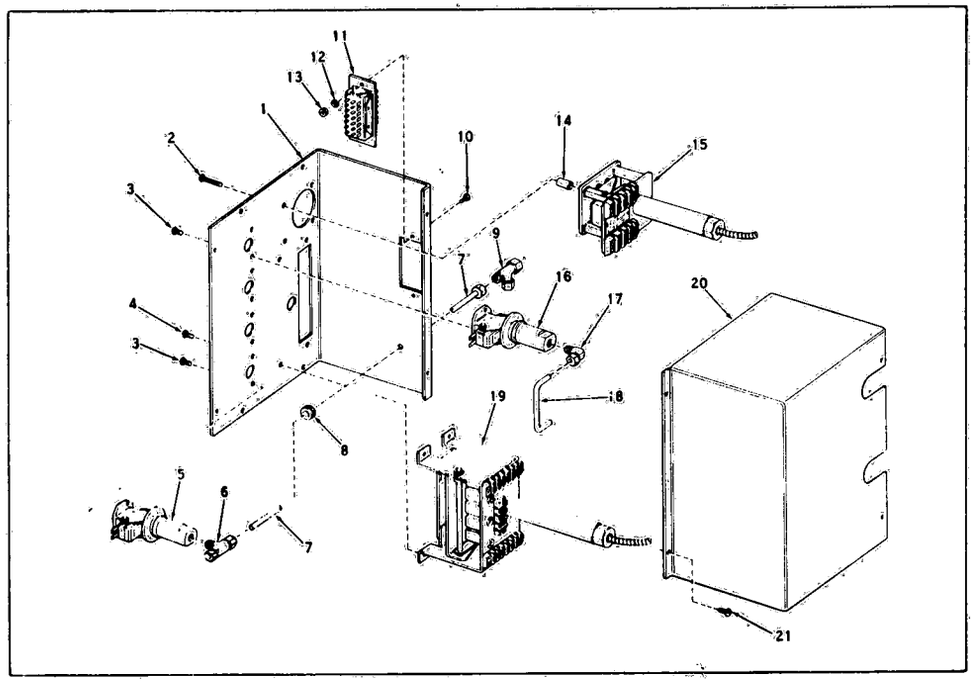


Figure 7-22. TEMPERATURE-PRESSURE SWITCH ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-22-	P	134022	091	TEMPERATURE-PRESSURE SWITCH ASSEMBLY	X
1	P	149832	010	• PLATE, Mounting	1
2	P	38569	041	• SCREW, Round head (#8-32 x 1/4)	4
3	P	12461	041	• SCREW, Round head (#6-32 x 1/4)	4
4	P	12283	041	• SCREW, Round head (#10-32 x 1/4)	4
5	P	39389	091	• PRESSURE SWITCH	3
6	P	41222	091	• COMPRESSION FITTING	3
7	P	89042	091	• TUBING	1
8	P	90343	091	• GROMMET	1
9	P	39060	045	• COMPRESSION TEE	1
10	P	4682	041	• SCREW, Round head (#8-32 x 3/8)	2
11	P	90736	091	• RECEPTACLE	1
12	P	19676	041	• LOCKWASHER	2
13	P	3038	041	• NUT	2
14	P	41573	091	• SPACER	4
15	P	41272	091	• TEMPERATURE CONTROL	1
16	P	39393	091	• PRESSURE SWITCH	1
17	P	41257	091	• COMPRESSION ELBOW	1
18	P	78381	091	• TUBING	3
19	P	78378	091	• TEMPERATURE CONTROL, 3-switch	1
20	P	139996	031	• COVER	1
21	P	40857	045	• SCREW, Self tapping (#6-32 x 1/4)	4

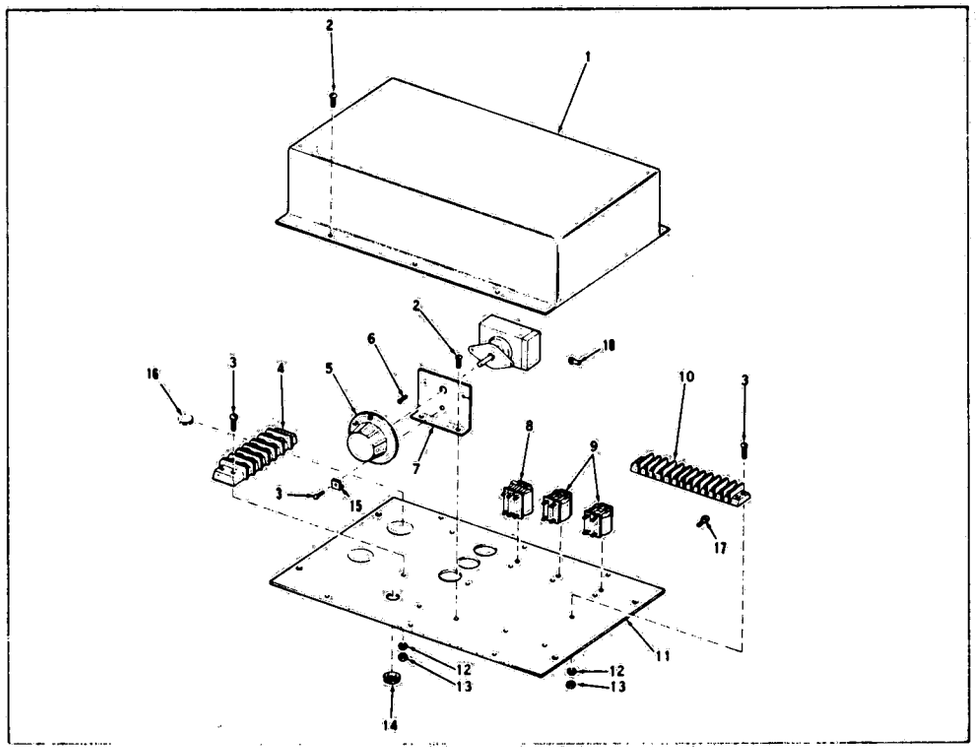


Figure 7-23. POWER BOX ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER		DESCRIPTION	UNITS PER ASSEMBLY
7-23-	P 98261	091	POWER BOX ASSEMBLY, Wired	X
1	P 139994	091	. COVER	1
2	P 90168	045	. SCREW, Round head (#10-32 x 5/16)	8
3	P 11241	041	. SCREW (#8-32 x 5/8)	5
4	P 91703	091	. TERMINAL STRIP (Gas Conditioner)	1
5	P 50587	091	. THERMOSTATIC SWITCH (For Heaters)	1
6	P 12529	061	. SCREW, Round head (#6-32 x 1/4)	2
7	P 89156	031	. MOUNTING ANGLE	1
8	P 41295	091	. RELAY	1
9	P 41294	091	. RELAY	2
10	P 91941	091	. TERMINAL STRIP	1
11	P 139990	031	. MOUNTING PLATE	1
12	P 19676	041	. LOCKWASHER	4
13	P 3038	041	. NUT	4
14	P 20343	091	. GROMMET, Split	1
15	P 75221	061	. CATCH, Locking	1
16	P 22207	056	. BUTTON, Plug	2
17	P 90619	091	TERMINAL, Wire	11
18	P 14865	091	TERMINAL, Wire	5

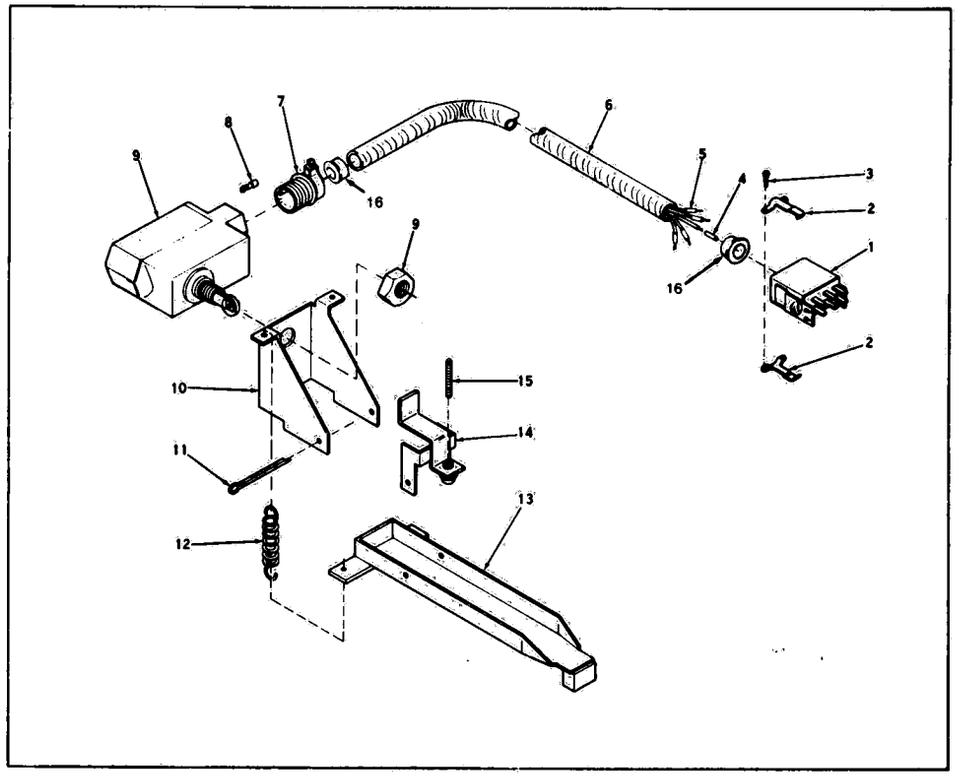


Figure 7-24. DOOR SWITCH ASSEMBLY (For Units Shipped Before 9/76).

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-24-	139624-91	DOOR SWITCH ASSEMBLY — For Units Shipped Before 9/76	X
	96238-91	ACTUATOR CABLE ASSEMBLY	X
1	90612-91	. PLUG, 6 Pin	1
2	79498-45	. CLAMP, Conduit	2
3	90170-45	. SCREW, Self tapping	2
4	78629-091	. SLEEVE	5
5		. WIRE, Stranded	5
6	92247-003	. FLEXIBLE CONDUIT	1
7	90331-91	. CONNECTOR, Flexible conduit	1
8	90619-91	. WIRE TERMINAL	5
9	90752-91	DOOR SENSOR SWITCH ASSEMBLY	1
10	96134-45	BRACKET, Door switch	1
11	90893-61	COTTER PIN	1
12	90751-61	SPRING, Door switch	2
13	90748-45	ARM, Door switch	1
14	90706-45	ADJUSTMENT LEVER	1
15	25542-91	SETSCREW, Socket head (#10-24 x 7/8)	1
16	150122-001	BUSHING, Anti Short	2

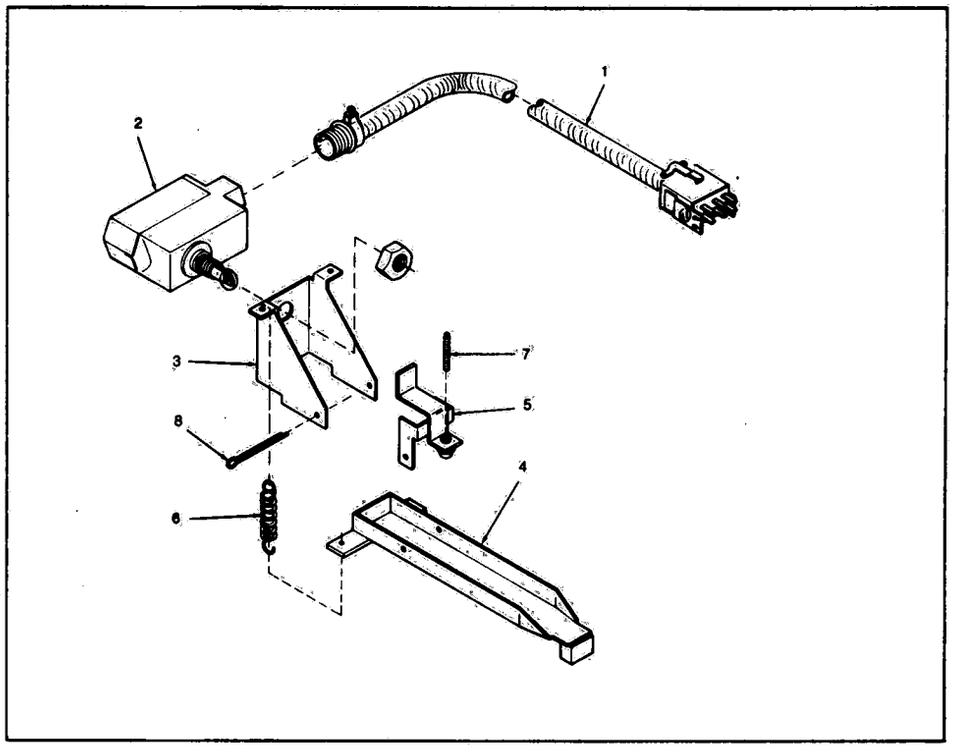


Figure 7-24A. DOOR SWITCH ASSEMBLY (For Units Shipped After 9/76).

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-24A-	P	134319	001	DOOR SWITCH ASSEMBLY (For Units Shipped After 9/76)	X		
1	P	56197	001	• CABLE ASSEMBLY	1		
2	P	90752	091	• SWITCH, Door Sensor	1		
3	P	96134	045	• BRACKET, Door Switch	1		
4	P	90748	045	• ARM WELDMENT, Door Switch	1		
5	P	90706	045	• LEVER WELDMENT, Adjustment	1		
6	P	90751	061	• SPRING, Door Switch	2		
7	P	25542	091	• SETSCREW, Socket (#10-24 x 7/8 long)	1		
8	P	90693	061	• PIN, Cotter	1		

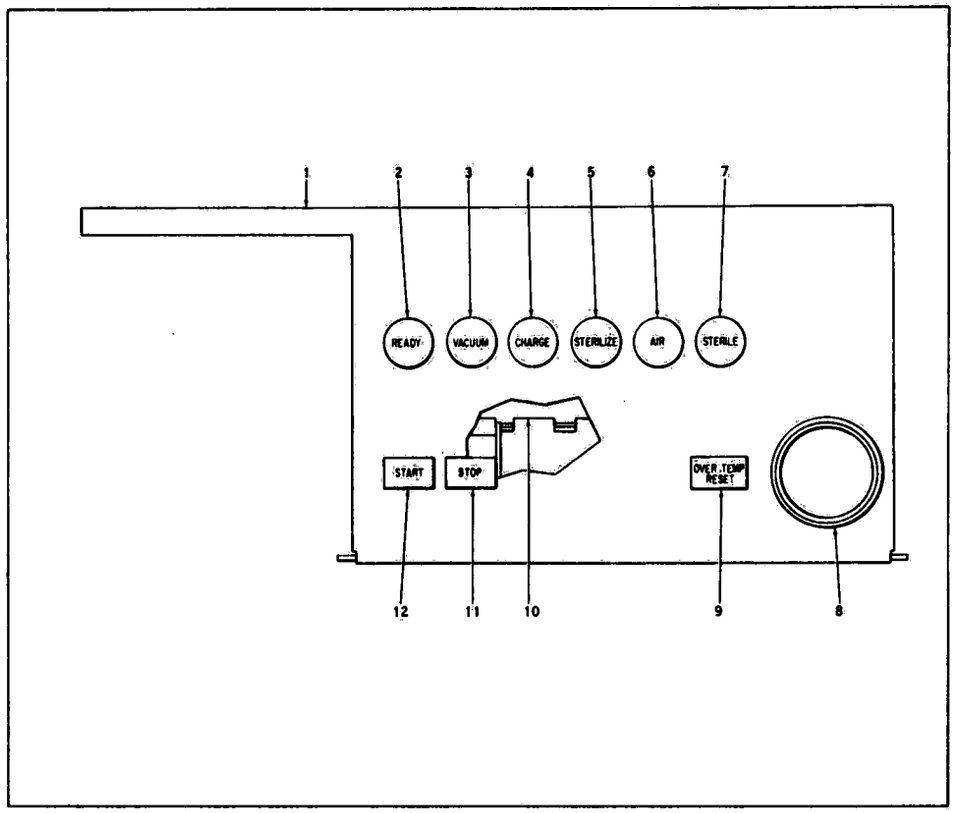


Figure 7-25. PANEL ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-25-	P	139995	091	PANEL ASSEMBLY, 16" X 16" X 26"	X		
	P	139998	091	PANEL ASSEMBLY, 20" X 20" X 38"		X	
1	P	96949	010	• PANEL ASSEMBLY, 3 Switch control	1		
	P	96943	010	• PANEL ASSEMBLY, 3 Switch control		1	
2	P	90532	010	• LENS INDICATOR (READY)	1	1	
3	P	89022	010	• LENS INDICATOR (VACUUM)	1	1	
4	P	89024	010	• LENS INDICATOR (CHARGE)	1	1	
5	P	90534	010	• LENS INDICATOR (STERILIZE)	1	1	
6	P	89023	010	• LENS INDICATOR (AIR)	1	1	
7	P	90537	010	• LENS INDICATOR (STERILE)	1	1	
8	P	90062	038	• GAUGE TRIM RING	1	1	
9	P	89027	010	• PUSH BUTTON (OVER TEMPERATURE RESET)	1	1	
10	P	90172	061	• HINGE ROD	1	1	
11	P	89039	010	• PUSH BUTTON (STOP)	1	1	
12	P	89038	010	• PUSH BUTTON (START)	1	1	

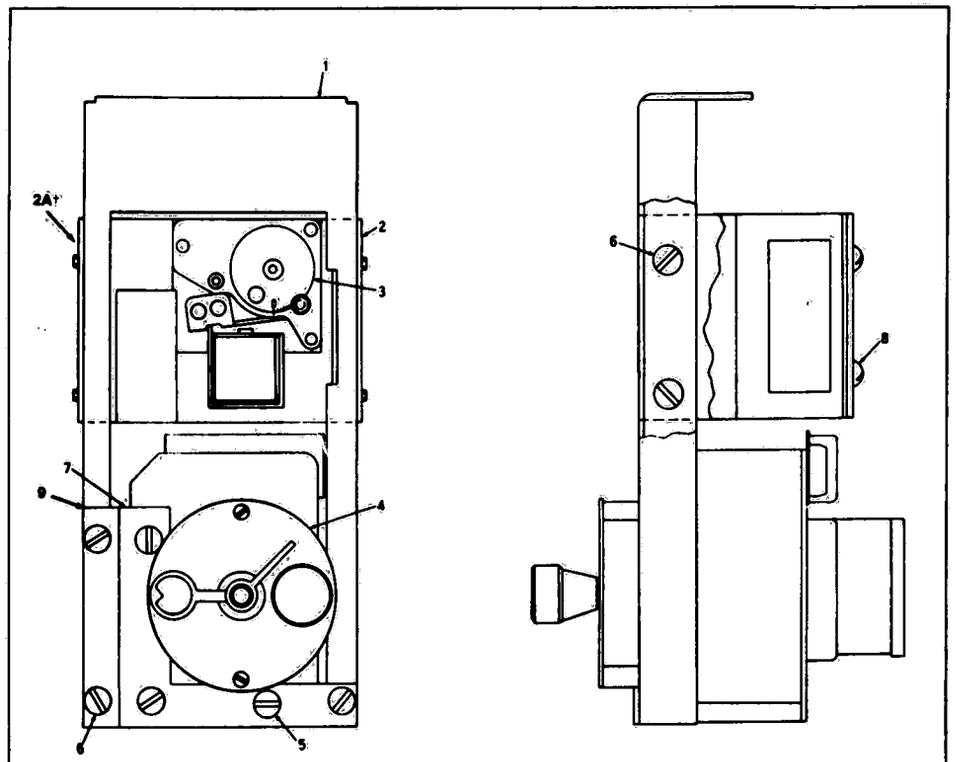


Figure 7-26. TIMER ASSEMBLIES.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-26-	P	139984	091	TIMER ASSEMBLIES	X
1	P	96047	091	• BRACKET	1
2	P	96925	091	• BRACKET (Right Hand) Delay timer	1
2A	P	55871	091	• BRACKET (Left Hand)	1
3	P	41056	091	• DELAY TIMER (60 Minute)	1
4	P	96909	091	• EXPOSURE TIMER	1
	P	55920	091	• EXPOSURE TIMER, 50 Cycle	A/R
5	P	15361	042	• SCREW, Machine (#10-32 x 1/4)	3
6	P	90168	045	• SCREW, Self tapping (#10 x 5/16)	7
7	P	90194	091	• RETAINER, Timer	1
8	P	40357	045	• SCREW, Self tapping (#6-32 x 1/4 — Used with Index No. 2)	2
8A	P	23437	041	• SCREW (#8-32 x 1/4 — Used with Index No. 2A)	2
9	P	24488	091	• WASHER	1

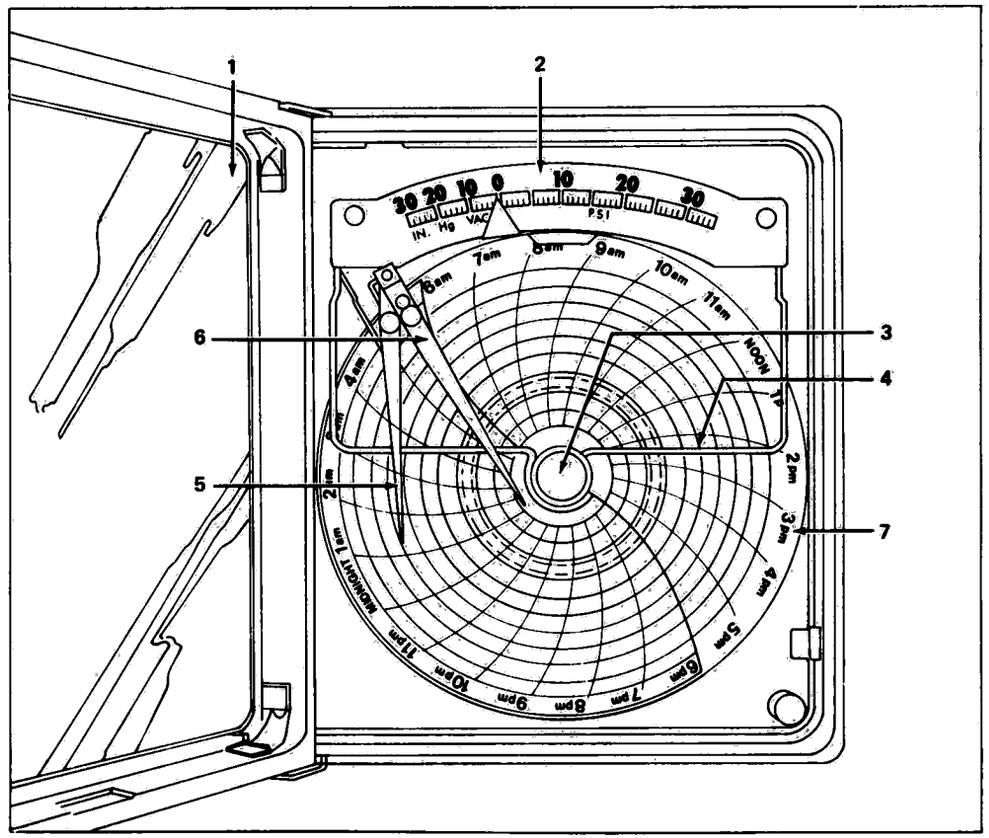


Figure 7-27. RECORDER.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-27-	P	55329	091	RECORDER	X
1	P	76960	091	DOOR GLASS	1
2	P	96932	091	SCALE	1
3	P	76961	091	CHART HUB	1
4	P	76962	091	PEN LIFTER	1
5	P	76963	NLA	REAR CAPILLARY PEN (SUB: 764315-403)	1
6	P	76245	NLA	FRONT CAPILLARY PEN (SUB: 764315-404)	1
7	P	96907	001	CHART (Box of 100)	AR
	P	89490	NLA	BLUE INK (Bottle) (SUB: 764315-404)	AR
	P	89491	NLA	RED INK (Bottle) (SUB: 764315-403)	AR
	P	76965	091	INK BOTTLE	AR
	P	76966	091	MOTOR, Chart drive 60 cycle	AR
	P	79435	091	MOTOR, Chart Drive, 50 cycle	AR
	P	764315	NLA	PEN, Red Fibre Tip, Pack of Six (SUB: 764315-403)	AR
	P	764315	NLA	PEN, Blue Fibre Tip, Pack of Six (SUB: 764315-404)	AR
	P	764315	402	ARM, Pen	AR
	P	764315	403*	KIT, Red	AR
	P	764315	404*	KIT, Blue	AR

*Kit includes pack of six pens and one arm.

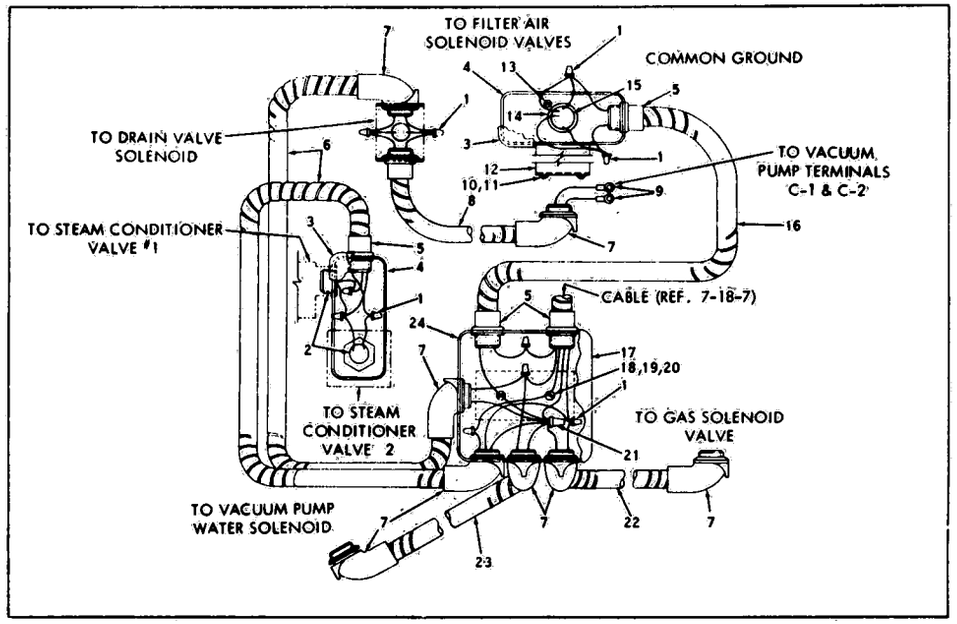


Figure 7-28. CABLE ASSEMBLY: Switch Assembly to Solenoids.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-28-	98287-91	CABLE ASSEMBLY, SWITCH ASSEMBLY TO SOLENOIDS	X
1	18538-91	. PARALLEL CONNECTOR	11
2	37774-91	. NIPPLE, Chase	2
3	23346-91	. COVER, Box	2
4	23345-91	. JUNCTION BOX	2
5	90331-91	. FLEXIBLE CONDUIT CONNECTOR	4
6	89805-91	. FLEXIBLE CONDUIT (26" Long)	2
7	90625-91	. CONNECTOR, 90° Flexible conduit	8
8	90613-91	. FLEXIBLE CONDUIT (28" Long)	1
9	90619-91	. WIRE TERMINAL	2
10	19676-41	. LOCKWASHER	2
11	9288-41	. SCREW, Round head (#8-32 x 1/2)	1
12	96899-45	. BRACKET, Junction box	1
13	24840-61	. SCREW, Self tapping (#10-32 x 1/2)	1
14	8681-91	. LOCK NUT, Conduit	1
15	91702-91	. NIPPLE, Chase	1
16	91856-91	. FLEXIBLE CONDUIT (48" Long)	1
17	22614-91	. COVER, Box	1
18	3929-42	. SCREW, Round head (#10-24 x 1/2)	2
19	19677-41	. LOCKWASHER	2
20	89098-45	. CLAMP, Box	1
21	17691-91	. PARALLEL CONNECTOR	1
22	91657-91	. FLEXIBLE CONDUIT (14" Long)	1
23	NLA	. FLEXIBLE CONDUIT (18" Long)	1
24	30182-91	. BOX, Junction	1

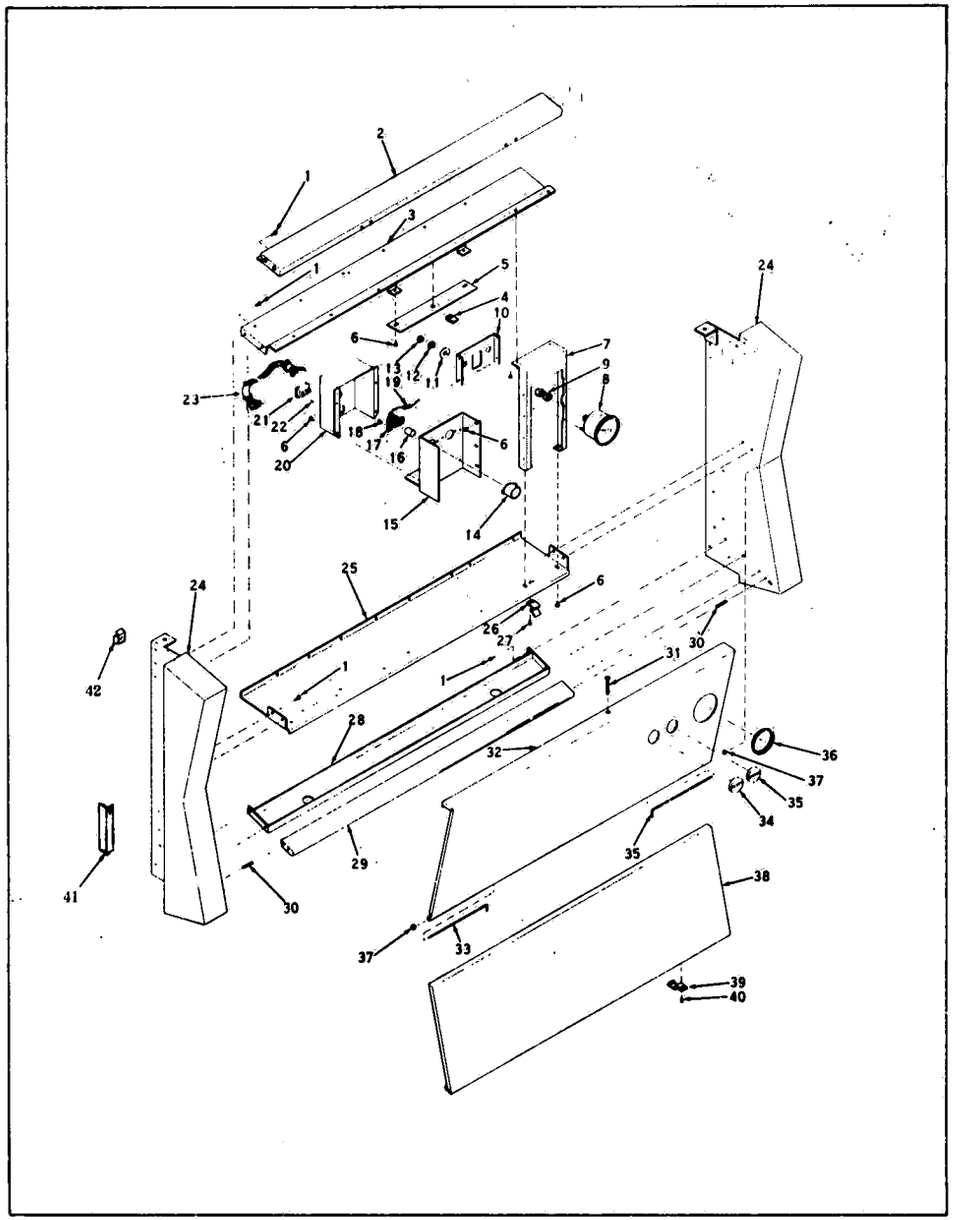


Figure 7-29. REAR CONTROL ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-29-	P	149790	091	REAR CONTROL ASSEMBLY	X		
1	P	90170	045	SCREW, Self tapping (#8 x 5/16)	22		
2	P	96054	010	TOP TRIM PANEL ASSEMBLY	1		
3	P	90739	031	INSTRUMENT RETAINING PANEL	1		
4	P	91000	045	SPEED NUT (#10-24)	1		
5	P	51089	045	BAR, Support	1		
6	P	90168	045	SCREW, Self tapping (#10 x 5/16)	15		
	P	139643	091	REAR CONTROL INSTRUMENT ASSEMBLY	X		
7	P	96047	091	• BRACKET, Instrument	1		
8	P	90525	091	• CHAMBER PRESSURE GAUGE	1		
9	P	91663	091	• COMPRESSION COUPLING	1		
10	P	96200	091	• BRACKET, Chamber pressure gauge	1		
11	P	26564	045	• WASHER	2		
12	P	10445	091	• WASHER, Plain	2		
13	P	2980	042	• HEX NUT, Full	2		
14	P	90344	040	• SHIELD BASE	2		
15	P	96234	091	• BRACKET, Lamp socket	1		
16	P	90466	091	• SLEEVE, Lamp socket	2		
17	P	90465	091	• LAMP SOCKET	2		
18	P	90327	045	• SEMI TUBE RIVET	4		
19		NLA		• WIRE, Stranded (2-1/2 inch)	1		
20	P	96323	091	• COVER, Lamp socket	1		
21	P	90621	091	• 6 PIN RECEPTACLE	1		
22	P	78629	091	SLEEVE	6		
23	P	96876	091	DOUBLE DOOR CABLE	1		
24	P	99833	001	INSTRUMENT PANEL TRIM, Left hand	1		
	P	99832	001	INSTRUMENT PANEL TRIM, Right hand	1		
	P	96350	091	PANEL ASSEMBLY	X		
25	P	139635	031	• PANEL, Instrument support	1		
26	P	90906	091	• SPRING	2		
27	P	90927	091	• RIVET	4		
28	P	96349	091	REAR STEAM BAFFLE PANEL	1		
	P	90167	091	TRIM BAR ASSEMBLY	X		
29	P	90018	033	• TRIM BAR	1		
30	P	36683	061	• ROLL PIN	4		
31	P	51088	061	SCREW, Flat head (#10-24 x 1-1/4)	1		
	P	96348	091	REAR CONTROL PANEL ASSEMBLY	X		
32	P	139649	010	• REAR CONTROL PANEL	1		
33	P	90063	061	• PIVOT ROD	2		
34	P	90532	010	• LENS (READY INDICATOR)	1		
35	P	90537	010	• LENS (STERILE INDICATOR)	1		
36	P	90062	033	• GAUGE TRIM RING	1		
37	P	90110	091	CONTROL PANEL SPACER	2		
	P	96155	010	REAR DOOR PANEL ASSEMBLY	X		
38	P	139648	091	• REAR DOOR PANEL	1		
39	P	90866	091	• SPRING	2		
40	P	90927	091	• RIVET	4		
41	P	89422	061	SPRING SEAL RETAINER	2		
42	P	89479	061	SPRING SEAL CLAMP	2		

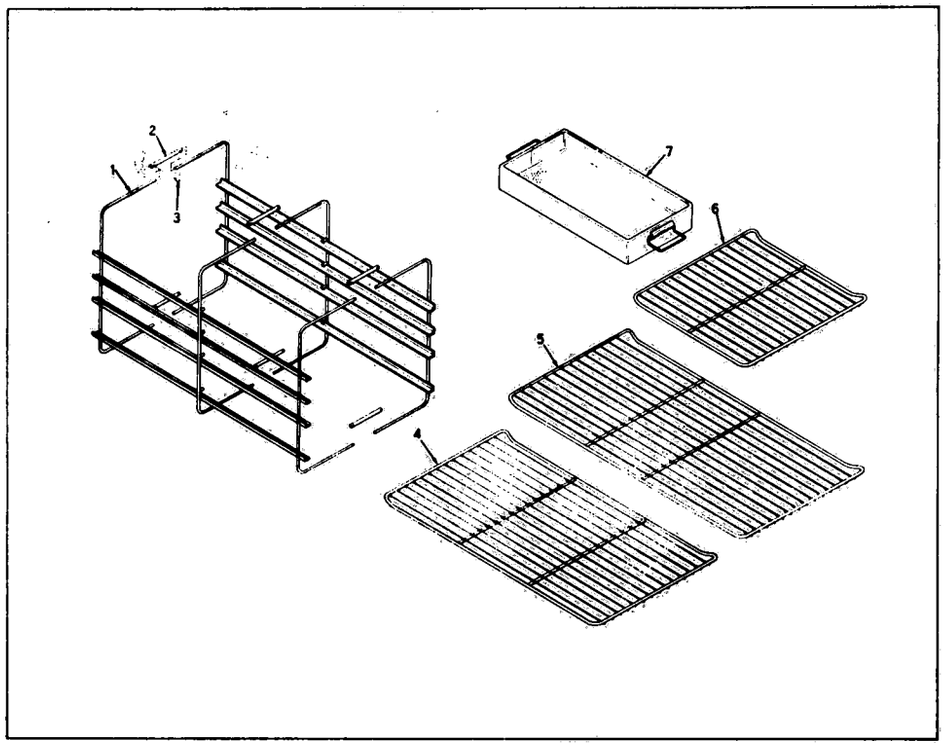


Figure 7-30. LOADING EQUIPMENT.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY		
7-30-				LOADING EQUIPMENT: 16" X 16", SINGLE DOOR	X		
				LOADING EQUIPMENT: 20" X 20", SINGLE DOOR		X	
				LOADING EQUIPMENT: 20" X 20", DOUBLE DOOR			X
	P	139771	091	RACK ASSEMBLY	1		
	P	139571	091	RACK ASSEMBLY		1	1
1	P	139772	068	• RACK	2		
	P	98311	068	• RACK		2	2
2	P	91291	062	• RACK RETAINING TUBE	4	6	6
3	P	90332	061	• THUMB SCREW	8	12	12
4	P	96358	068	BOTTOM SHELF	X		
	P	139573	068	BOTTOM SHELF		X	X
5	P	96359	068	SHELF	X		
	P	139651	068	SHELF		X	X
6	P	139922	068	HALF SHELF		X	X
7	P	139803	063	FULL TRAY	X		
	P	139693	001	TRANSFER CARRIAGE ASSEMBLY (See figure 7-31)		1	1
	P	54448	091	LOADING CAR ASSEMBLY (See figure 7-32)		1	1
	P	96931	063	SHELL TRACK ASSEMBLY (See figure 7-33)		1	1

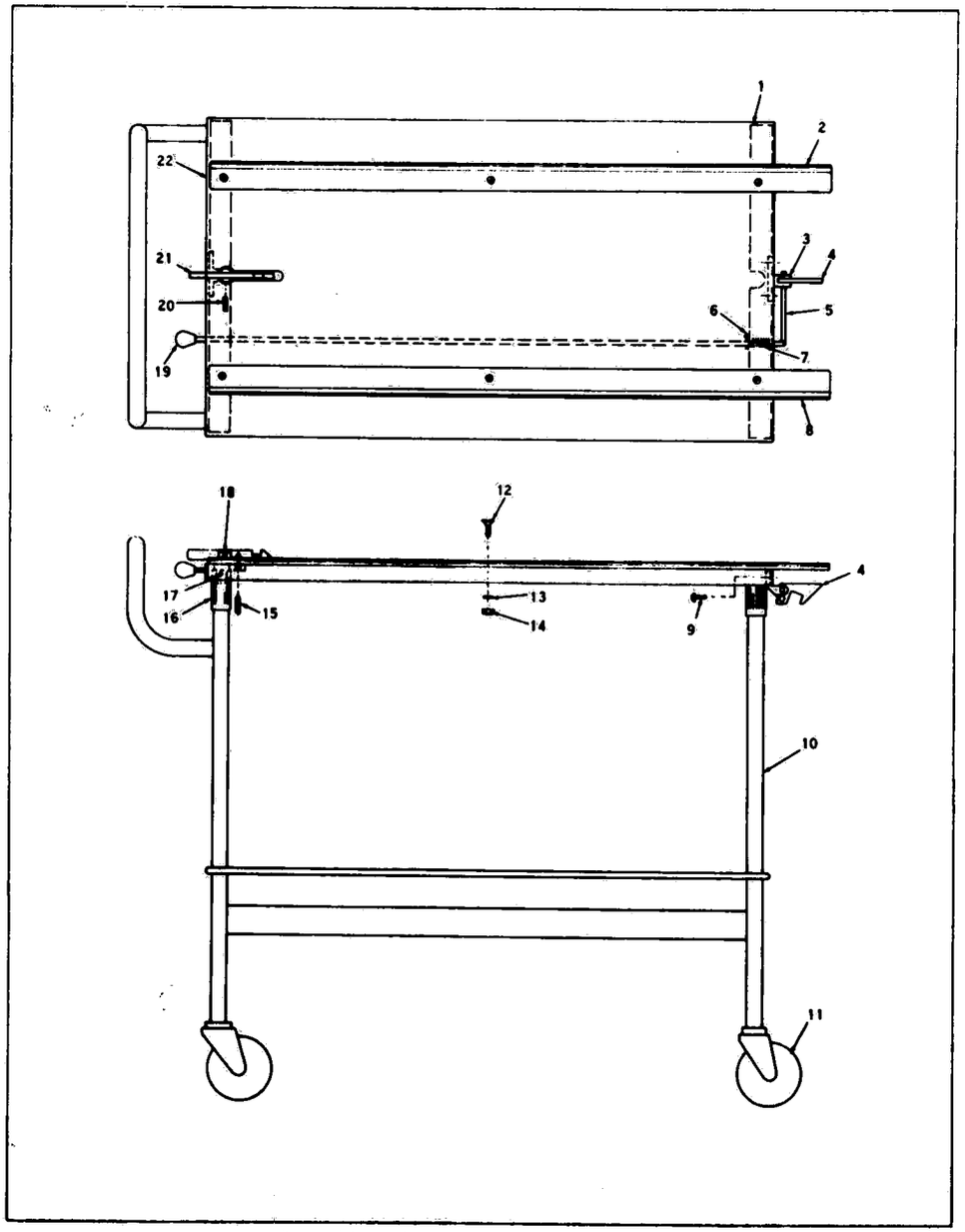


Figure 7-31. TRANSFER CARRIAGE ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-31-		TRANSFER CARRIAGE ASSEMBLY	X
1	30459-63	TOP	1
2	30444-63	TRACK, Right hand	1
3	30440-51	CATCH BLOCK	1
4	30447-63	CATCH, Door frame	1
5	30449-61	CATCH ROD	1
6	759943-001	COTTER PIN	1
7	30458-61	SPRING	1
8	30455-061	TRACK, Left hand	1
9	3999-41	SCREW (1/4-20 x 5/8)	4
10	139692-63	STAND ASSEMBLY	1
11	20542-91	CASTER	4
12	12549-62	SCREW (1/4-20 x 5/8)	6
13	19686-61	LOCKWASHER	6
14	8648-61	HEX NUT	6
15	30457-61	SPRING, Lock lever	1
16	30446-52	ADJUSTING COLLAR	4
17	4772-45	SCREW, Set (1/4-20 x 1/4)	4
18	30448-51	BLOCK, Lock lever	1
19	14918-91	KNOB	1
20	24268-61	ROLL PIN	2
21	30415-63	LOCK LEVER	1
22	30441-61	ANGLE ASSEMBLY	2

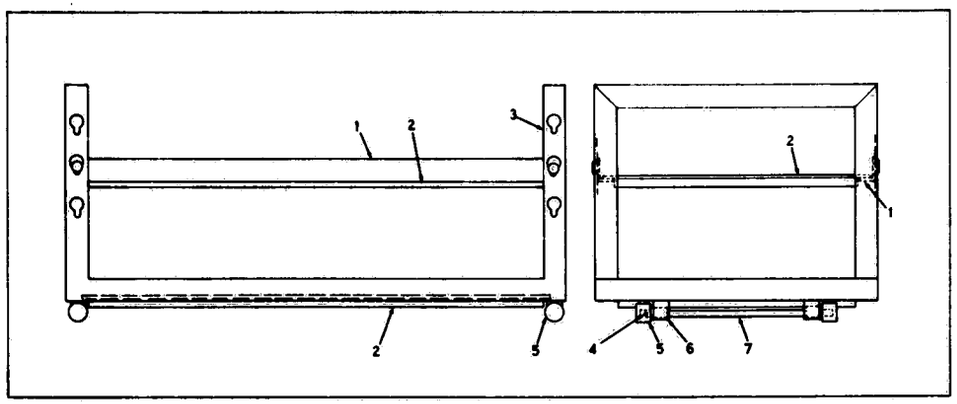


Figure 7-32. LOADING CAR ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-32-	54448-91	LOADING CAR ASSEMBLY	1
1	30420-63	ANGLE	2
2	30422-63	SHELF	2
3	30414-63	FRAME	1
4	24956-61	ROLL PIN	4
5	30418-61	WHEEL	4
6	30417-91	BUSHING	4
7	30416-61	AXLE	2

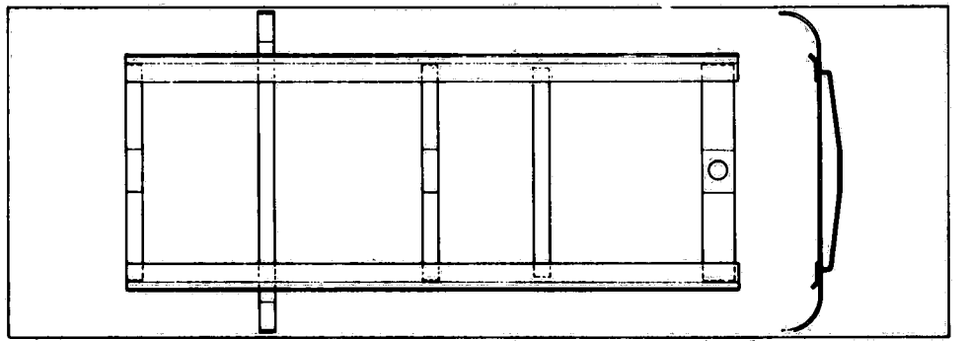


Figure 7-33. SHELL TRACK ASSEMBLY.

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-33-	96931-63	SHELL TRACK ASSEMBLY	1

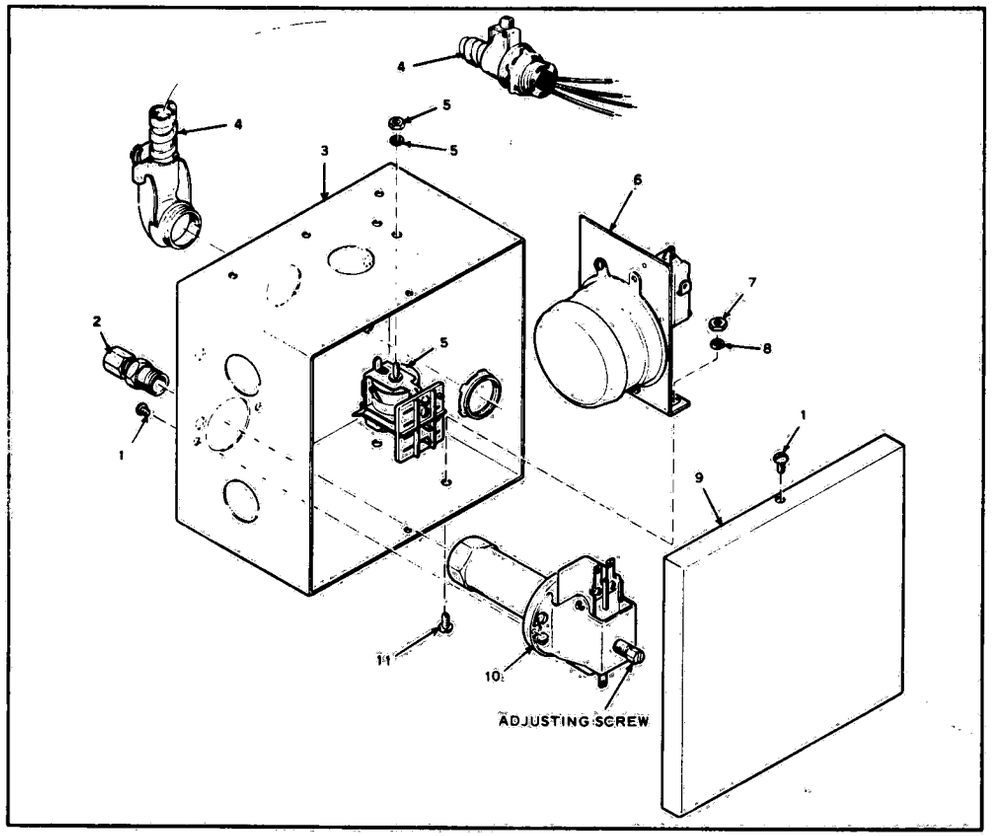


Figure 7-34. LOW GAS WARNING ASSEMBLY

FIG. & INDEX NO.	PART NUMBER	DESCRIPTION	UNITS PER ASSEMBLY
7-34	55015-91	LOW GAS WARNING ASSEMBLY	X
1	12451-41	SCREW, Round Head (#6-32 x 1/4)	4
2	41291-91	COMPRESSION FITTING	1
3	76672-91	BOX, Low Pressure Switch	1
4	55016-91	CABLE ASSEMBLY	1
5	37606-91	RELAY	1
6	76671-91	PULSE RELAY	1
7	3153-41	HEX NUT (#8-32)	2
8	19676-41	LOCKWASHER	2
9	76673-91	BOX COVER	1
10	76624-001	PRESSURE SWITCH	1
11	4682-041	SCREW, Round Head (#8-32 x 3/8)	2

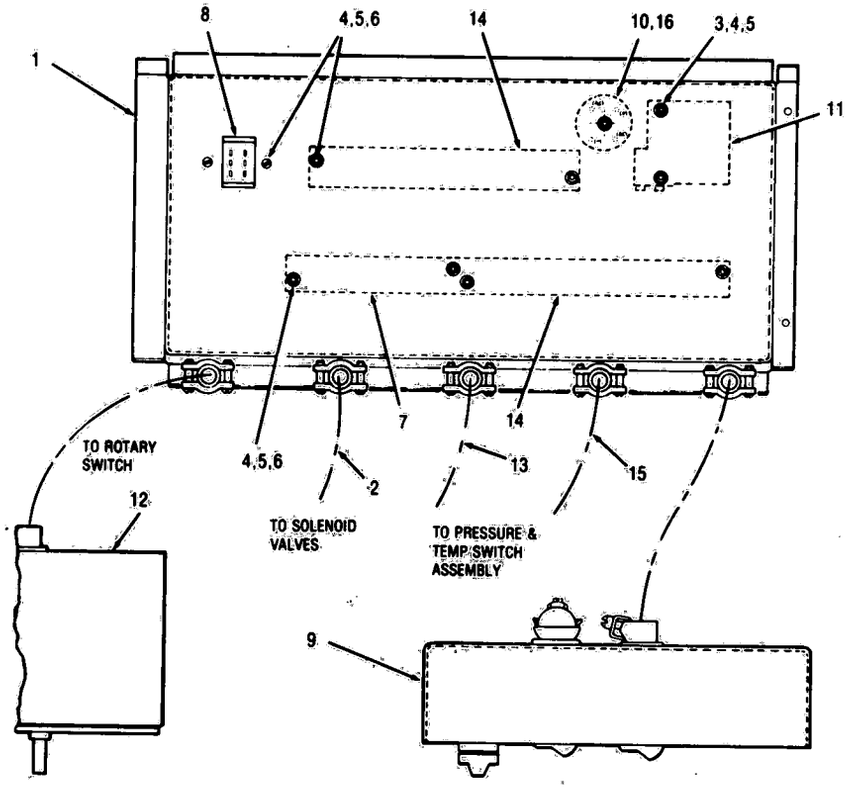


Figure 7-35. POWER SWITCH RECEPTACLE ASSEMBLY (For Units Shipped After 9/76) — SHEET 1 OF 3.

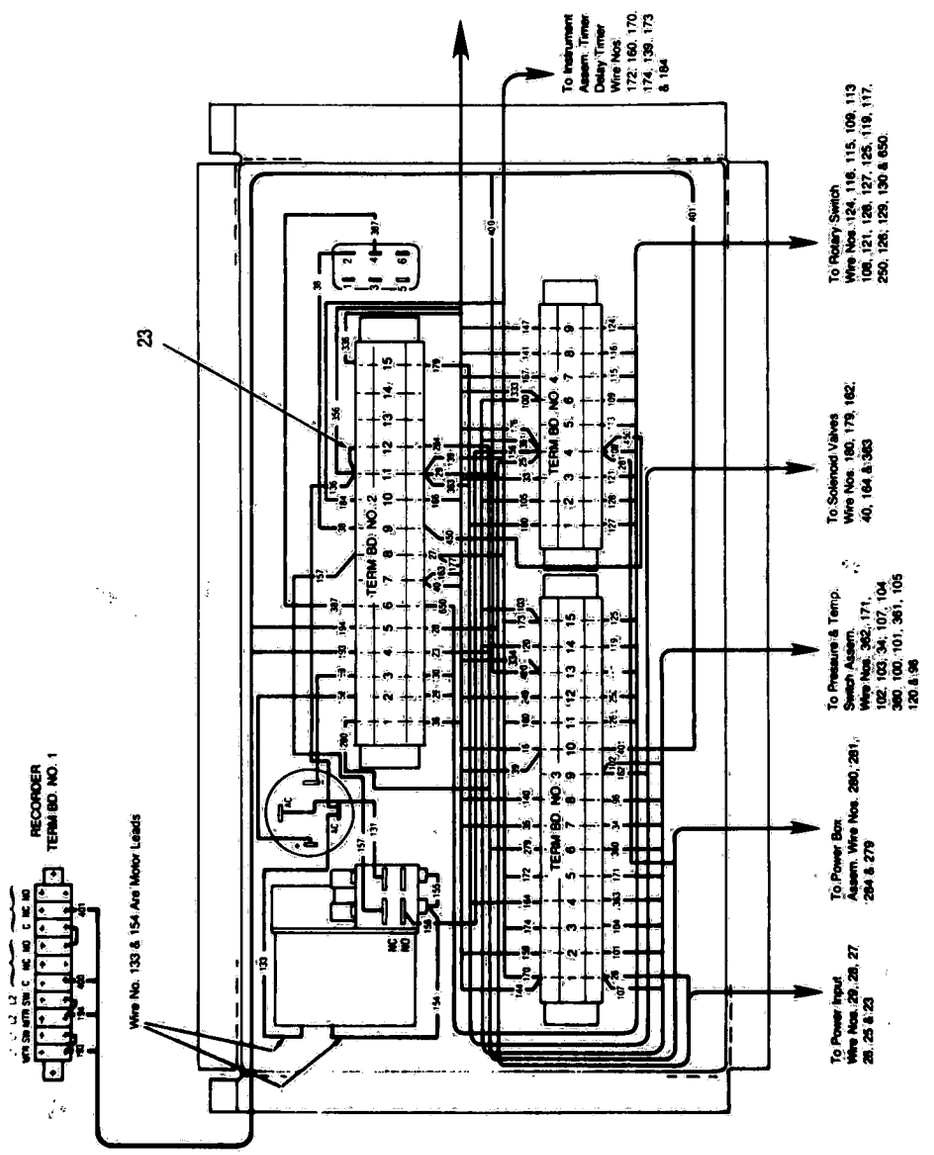


Figure 7-35. POWER SWITCH RECEPTACLE ASSEMBLY (For Units Shipped After 9/76) — SHEET 2 OF 3.

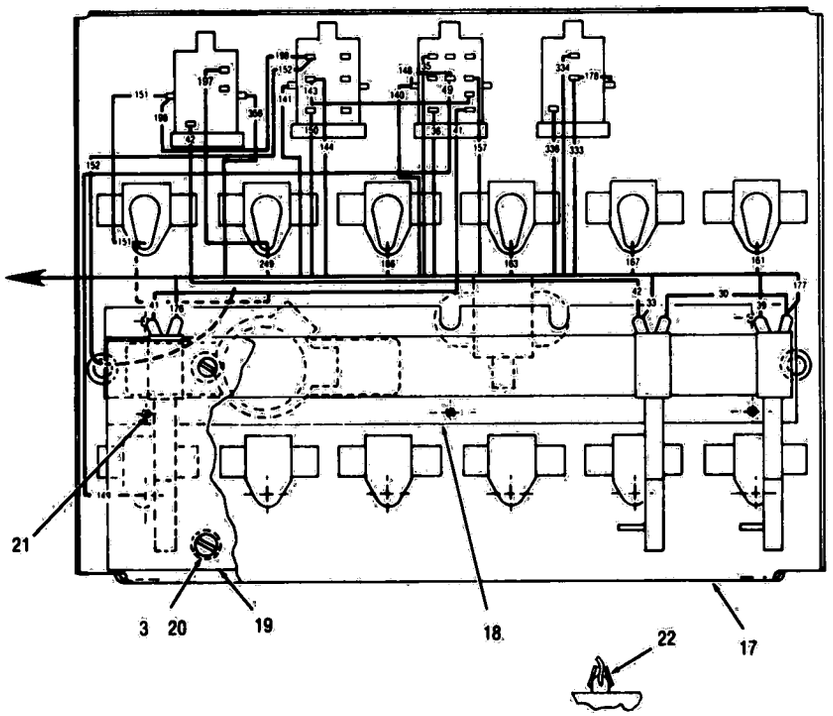


Figure 7-35. POWER SWITCH RECEPTACLE ASSEMBLY (For Units Shipped After 9/76) — SHEET 3 OF 3.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-35-	P	149789	091	RECEPTACLE ASSEMBLY (For Units Shipped After 9/76)	X
1	P	139988	031	• BOX, Receptacle	1
2	P	96946	091	• RECEPTACLE, Box To Solenoid Valves Cable Assembly	1
3	P	12531	061	• SCREW, Round Head (#6-32 x 3/8)	7
4	P	19684	061	• WASHER (#6)	10
5	P	8644	061	• NUT, Hex (#6-32)	10
6	P	3960	041	• SCREW, Round Head (#6-32 x 1/2)	6
7	P	40830	091	• STRIP, Terminal	1
8	P	79427	091	• RECEPTACLE, Six Pin	1
9	P	96897	091	• ELECTRIC GENERATOR SWITCH ASSEMBLY	1
10	P	79747	001	• RECTIFIER	1
11	P	41266	091	• TIMER	1
12	P	139983	091	• ROTARY SWITCH ASSEMBLY	1
13	P	55243	091	• PRESSURE-TEMPERATURE SWITCH CABLE ASSEMBLY	1
14	P	41560	091	• STRIP, Terminal	2
15	P	96894	091	• POWER CABLE ASSEMBLY	1
16	P	90695	091	• TERMINAL, Quick Disconnect	4
17	P	139986	091	• SWITCH CHASSIS WIRE ASSEMBLY	1
18	P	98260	091	• SWITCH MOUNTING ASSEMBLY	1
19	P	96775	091	• COVER ASSEMBLY	1
20	P	22419	041	• SCREW, Round Head Machine (#6-32 x 1-3/4)	3
21	P	24910	061	• SCREW, Round Head Self Tapping (#8-3/8)	5
22	P	78629	091	• SLEEVE	30
23	P	43603	091	• JUMPER	1
	P	90619	091	• TERMINAL, Wire (Not Shown)	35

Note: See Figure 3-2C

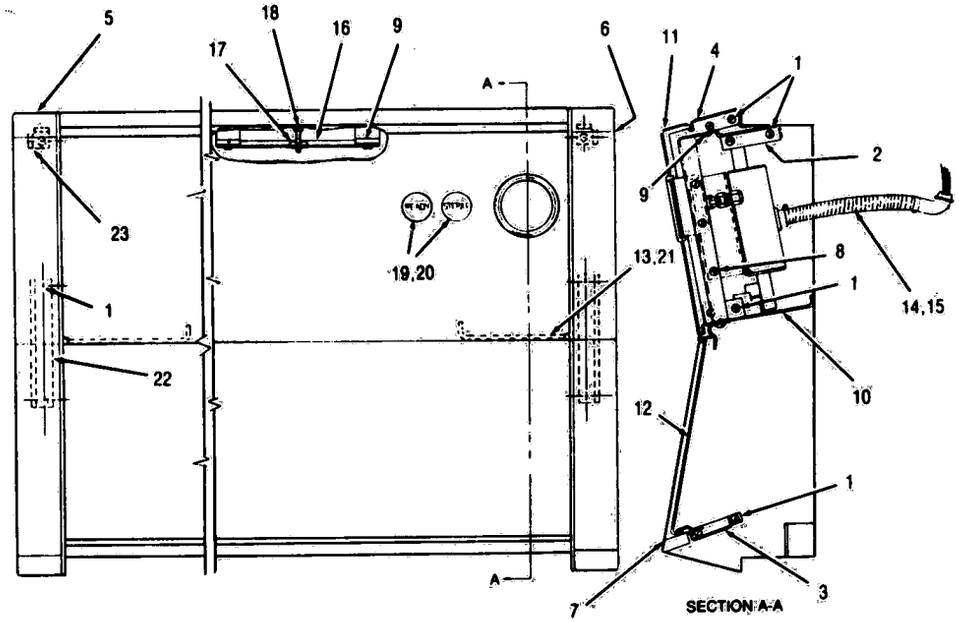
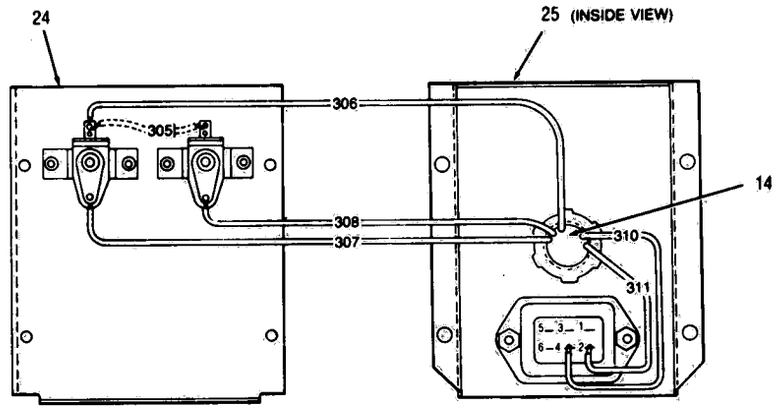
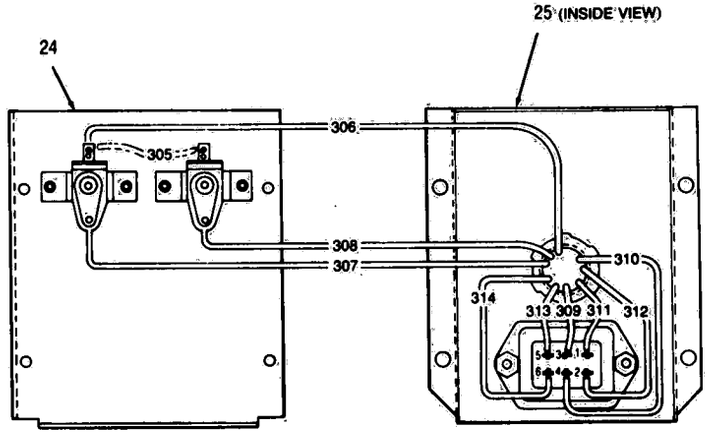


Figure 7-36. DOUBLE DOOR REAR CONTROL ASSEMBLY — SHEET 1 OF 2.



A. For Units Shipped Before 9/76.



B. For Units Shipped After 9/76.

Figure 7-36. DOUBLE DOOR REAR CONTROL ASSEMBLY — SHEET 2 OF 2.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-36-	P	149790	091	DOUBLE DOOR REAR CONTROL ASSEMBLY	X
1	P	90170	045	• SCREW, Self Tapping (#8 x 5/16)	22
2	P	90739	031	• PANEL, Instrument Retaining	1
3	P	96349	091	• PANEL, Rear Steam Baffle	1
4	P	96054	010	• TOP TRIM PANEL ASSEMBLY	1
5	P	99833	001	• TRIM WELDMENT, Left Hand Instrument Panel	1
6	P	99832	001	• TRIM WELDMENT, Right Hand Instrument Panel	1
7	P	90167	091	• TRIM, Bar Assembly	1
8	P	139643	091	• REAR CONTROL, Instrument Assembly	1
9	P	90168	045	• SCREW, Self Tapping (#10 x 5/16)	16
10	P	96350	091	• REAR, Panel Assembly Instrument Support	1
11	P	96348	091	• CONTROL, Panel Assembly Rear	1
12	P	96155	010	• PANEL ASSEMBLY, Rear Door	1
13	P	90110	091	• SEALER, Control Panel	2
14	P	96876	091	• CABLE, Double Door	1
15	P	78629	091	• SLEEVE	6
16	P	51089	045	• BAR, Support	1
17	P	91000	045	• SPEEDNUT (10-24)	1
18	P	51088	061	• SCREW, Flat Head (10-24 x 1-1/4)	1
19	P	48111	091	• LAMP	2
20	P	90345	040	• SHIELD, Light	2
21	P	90063	061	• ROD, Pivot	2
22	P	89422	061	• RETAINER, Seal	2
23	P	89479	061	• CLAMP, Seal	2
24	P	96324	091	• BRACKET, Lamp Socket	2
25	P	96329	091	• SOCKET, Lamp	2

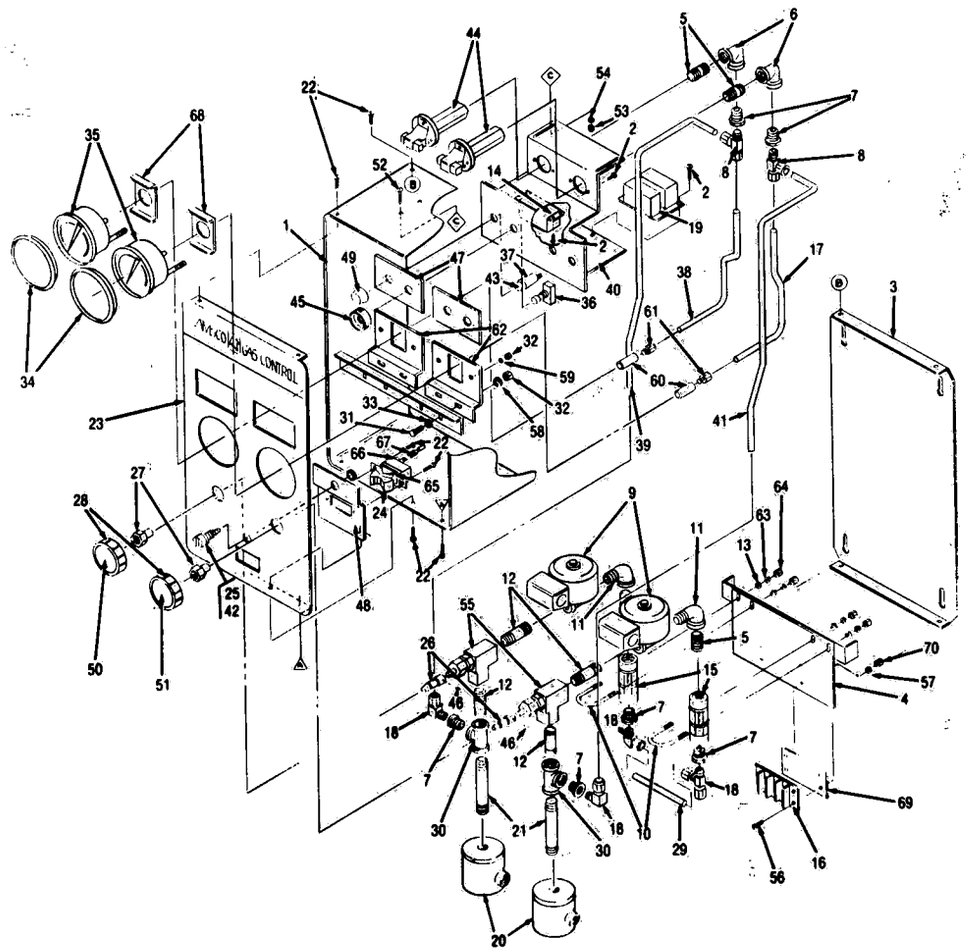


Figure 7-37. GAS CYLINDER CHANGEOVER PACKAGE.

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-37-	P	99840	091	GAS CYLINDER CHANGEOVER PACKAGE	X
1	P	134003	010	BOX ASSEMBLY	1
2	P	42603	091	SCREW, Round Head (6-32 x 7/8)	16
3	P	135999	001	COVER, Back	1
4	P	55818	091	BRACKET ASSEMBLY	1
5	P	42394	091	NIPPLE (1/4 IPS - 7/8 long)	4
6	P	42090	091	ELBOW (1/4 IPS)	2
7	P	40823	091	BUSHING (1/4-1/8)	6
8	P	49373	091	TEE (3/16 x 1/4 x 3/16)	3
9	P	129280	001	VALVE, Solenoid (1/4)	2
	P	764270	001	• • REPAIR KIT	AR
	P	764270	002	• • COIL, 120 volt	AR
10	P	83021	001	U-BOLT (1/4-20)	2
11	P	51079	061	ELL, Street (1/4 NPT)	2
12	P	44798	091	NIPPLE (1/4 NPT x 1-1/2)	4
13	P	49353	061	WASHER (1/4)	4
14	P	37606	091	RELAY	2
15	P	42094	061	VALVE, Check (1/4)	2
16	P	90746	091	TERMINAL, 3 Point	1
17	P	79473	061	TUBE (R.H.)	1
18	P	48131	091	ELBOW (1/8 IPS x 3/16 ODT)	3
19	P	40828	091	RELAY, Latch	2
20	P	47214	091	FILTER SEE FIG. 7-15	2
21	P	45182	091	NIPPLE (1/4 IPS x 3 long)	2
22	P	90169	045	SCREW (10-3/8)	16
23	P	134004	010	PANEL, Front	1
24	P	90624	091	SWITCH	1
25	P	89190	091	FUSELIGHT	1
26	P	150520	001	ADAPTOR	2
27	P	8605	043	NUT, Retaining	2
28	P	54899	091	KNOB	2
29	P	79177	061	TUBE	1
30	P	42092	091	TEE (1/4)	2
31	P	41805	044	SCREW, Hex Head (10-32 x 5/8)	4
32	P	2959	041	NUT (10-32)	4
33	P	17589	045	WASHER (1/2 OD x 7/32 ID x 3/64 Thick)	8
34	P	90062	033	BEZEL	2
35	P	51309	091	GAUGE (300 PSI)	2
36	P	40829	091	SWITCH, Reset	2
37	P	78010	091	SOCKET, Light	2
38	P	79472	061	TUBE (L.H.)	1
39	P	55819	061	TUBE	1
40	P	134002	045	BRACKET	1
41	P	55820	061	TUBE	1
42	P	118142	091	FUSE	1
43	P	78011	091	BULB, Light	2
44	P	75150	091	SWITCH, Pressure	2
45	P	44155	091	BEZEL, Switch	2
46	P	34518	061	SETSCREW	2
47	P	79171	010	PLATE, Indicator	2
48	P	79175	091	BRACKET	1
49	P	78013	091	LENS	2
50	P	75737	091	DECAL, Cylinder #1	1
51	P	75738	091	DECAL, Cylinder #2	1
52	P	15287	041	SCREW	4

FIG. & INDEX NO.	PART NUMBER			DESCRIPTION	UNITS PER ASSEMBLY
7-37- 53	P	2960	042	NUT	4
54	P	5511	041	WASHER	4
55	P	150519	001	VALVE, Angle (1/4)	2
56	P	3991	051	SCREW (10-24 x 1/2)	1
57	P	19678	045	LOCKWASHER (10)	1
58	P	19685	061	LOCKWASHER (10)	4
59	P	10445	091	WASHER	4
60	P	1306	091	COUPLING (1/8 NPT)	2
61	P	46364	091	CONNECTOR (1/8 IPS x 3/16 ODT)	2
62	P	55878	091	MOUNT, Gauge	2
63	P	19678	045	LOCKWASHER (1/4)	4
64	P	8648	061	NUT (1/4-20)	4
65	P	89709	001	LUG, Strip	1
66	P	32118	091	TERMINAL, Wire	1
67	P	32119	091	TERMINAL, Quick Disconnect	5
68	P	79070	091	SPACER	2
69	P	14166	091	CONNECTOR, Pressure	1
70	P	3040	042	NUT (10-24)	1

ENVIROGARD™ (PROGRAM II)

-For addition of Envirogard system to small Medallion ETO sterilizers. Kit includes post-sterilization control modification and local exhaust system. The local exhaust system is comprised of blower, manifold assembly, AMSCO Liquid/Gas Separator, door vent adapter, necessary hose and mounting hardware. Order and install one of the kits listed below:

SIZE	DESCRIPTION	PART NUMBER		
20 x 20	CAB, Single Door	P	56396	082
20 x 20	RECESSED, One Wall, Single Door	P	56396	083
20 x 20	RECESSED, One Wall, Double Door	P	56396	084
20 x 20	RECESSED, Two Wall, Double Door	P	56396	085

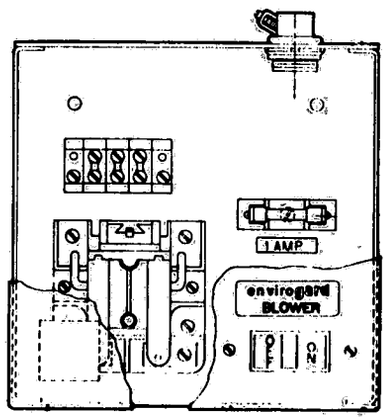


Figure 7-38. ELEMENTARY DIAGRAM.

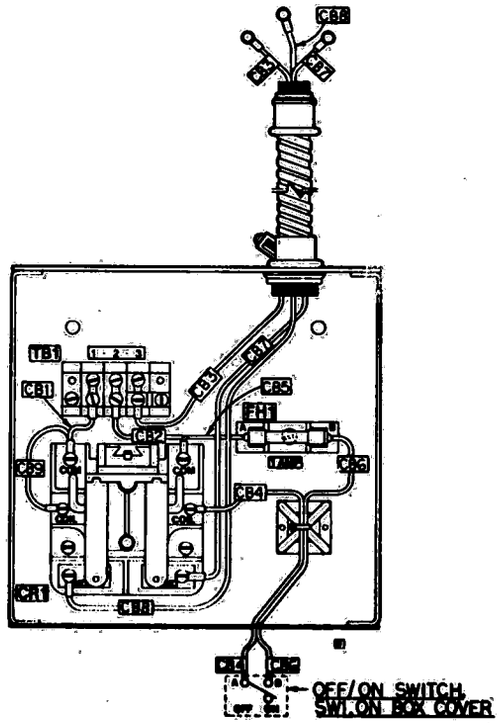


Figure 7-39. CONTROL BOX, BLOWER.

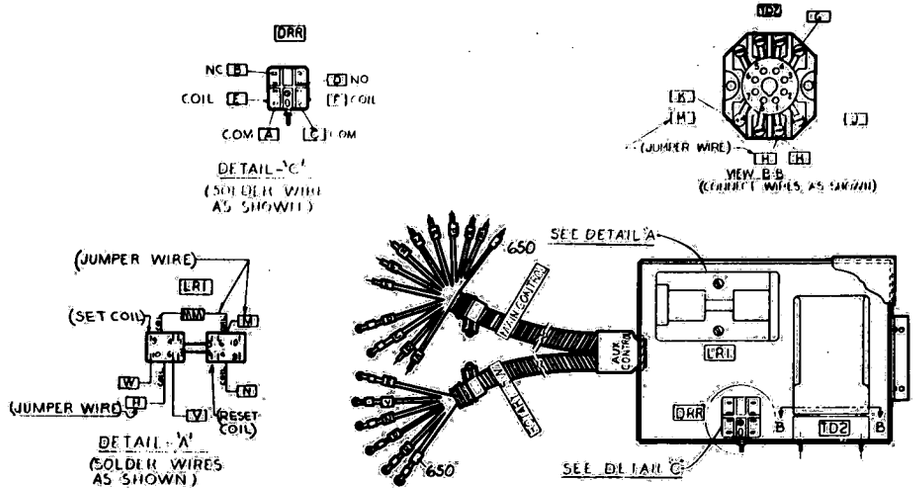


Figure 7-40. CONTROL AUXILIARY.

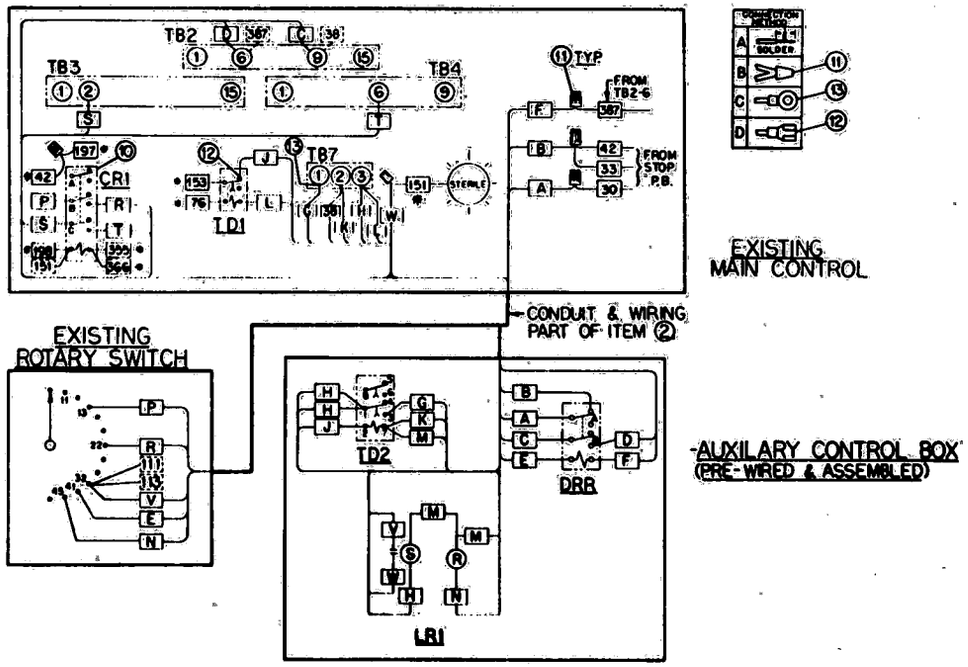


Figure 7-41. CONTROL ASSEMBLY MODIFICATION KIT.

AMSCO SERVICE

MEDALLION SERIES
CRYOTHERM® STERILIZER
P-754215-002

6/84

2 of 2