

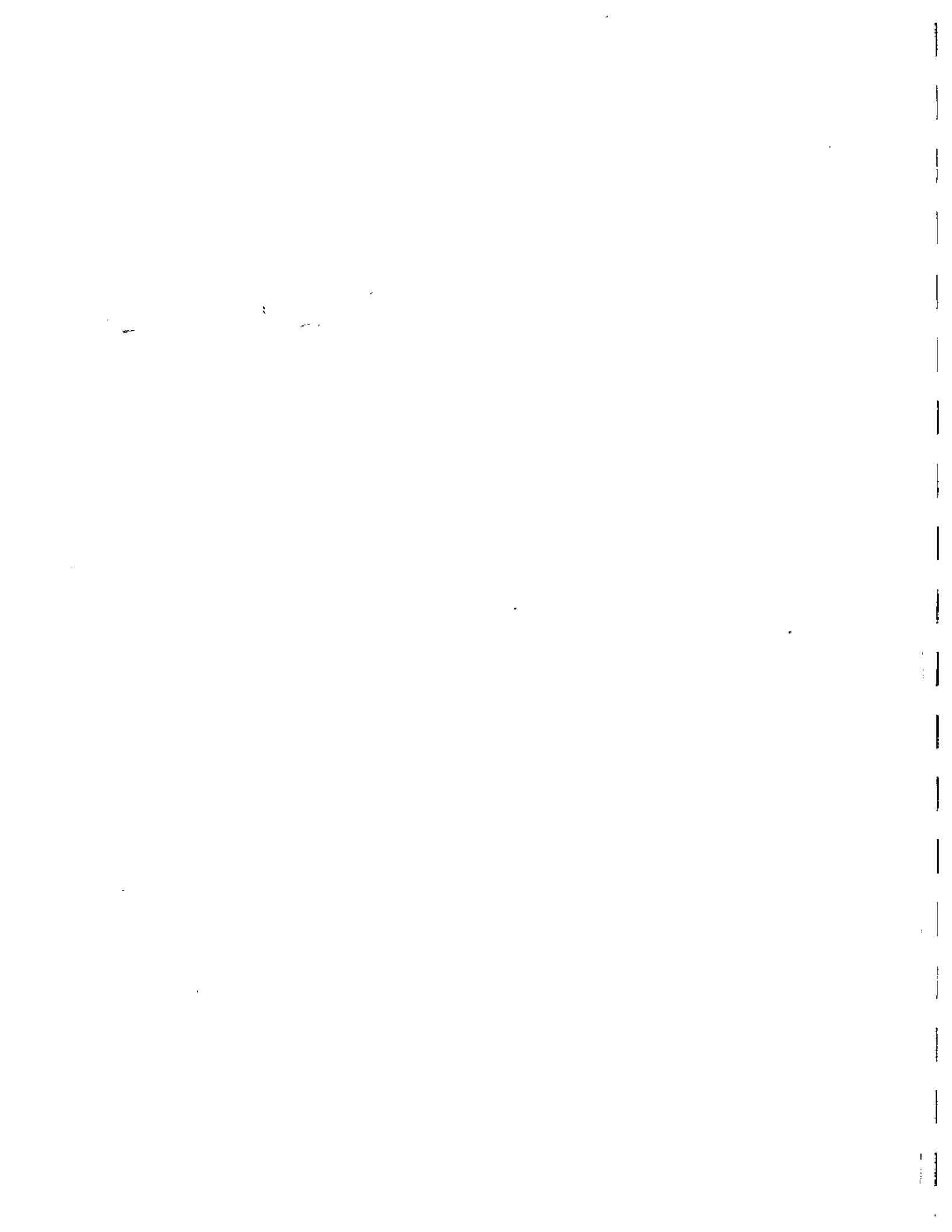
MODEL VC-2  
VACUUM CURETTAGE UNIT  
OPERATION & SERVICE MANUAL

BERKELEY BIO-ENGINEERING

RBE No. X17-52953

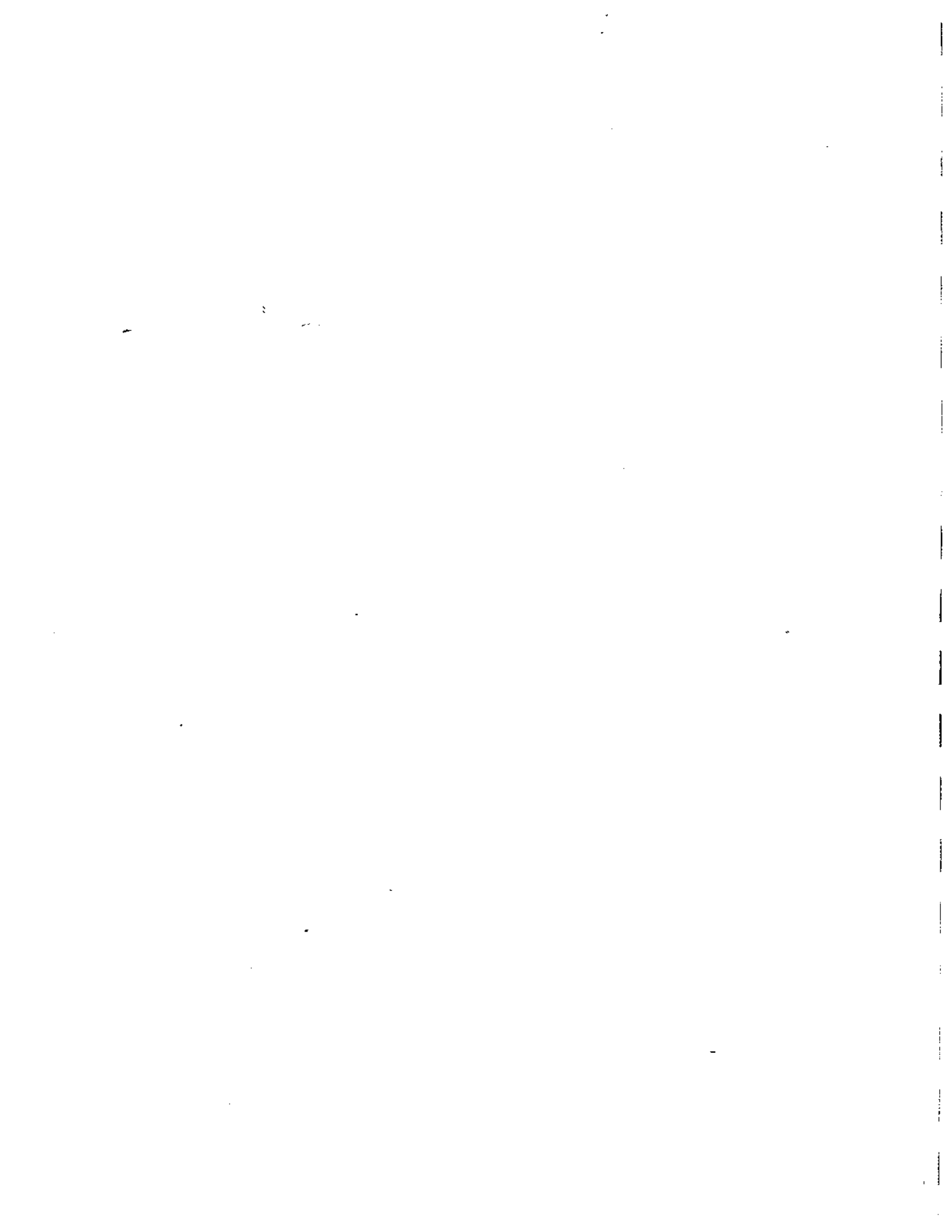
Revised: July 1978

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SECTION I  
INTRODUCTION

The Berkeley Bio-Engineering VC-2 has been specially designed to safely and rapidly evacuate the products of the first trimester of pregnancy. As with all Berkeley VC systems, the VC-2 enables a significant reduction in blood loss, myometrial damage, and anesthesia requirement.

The upper compartment contains ample space for storing the disposable VC accessories (collection tubes, swivel handles, Vacuettes<sup>®</sup>\*). The lower compartment contains the high-capacity pump and its explosion-proof motor (NEMA Rating: Group 1, Class C). The other external features — the collection bottle holders, vacuum gauge, vacuum adjust knob, and power knob — are contained on the top panel of the unit. The top panel and inner shelf are stainless steel, and the cabinet has a smooth, baked enamel finish. Rubber casters permit easy maneuverability of the entire unit.

Careful consideration of the important points in routine operation and maintenance will assure years of trouble-free performance from your VC-2.

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\*"Vacurette" is the registered trademark of disposable vacuum aspiration currettes manufactured and sold exclusively by Berkeley Bio-Engineering.

SECTION II  
PRELIMINARY INSTRUCTIONS

Refer to top view on Figure 3 (Page 12). Assemble the VC-2 as follows:

- (1) Open the shipping carton and remove the contents carefully, as some of the components are fragile. The bottles and tubing are shipped in the upper compartment.
- (2) Mount the two bottle holders to the top panel. Insert the mounting screw - welded to the bottom of each bottle holder - into the top panel. Then secure the screws underneath the panel with the wing nuts and lockwashers provided.
- (3) Insert the collection bottles into the bottle holders on the top panel of the unit.
- (4) Connect the tubing between the first and second collection bottle and between the second collection bottle and the inlet fitting on the top panel.
- (5) Select the appropriate Vacurette® and connect it to the collection tubing handle assembly. Then attach the handle assembly to the inlet port on the first collection bottle.
- (6) The VC-2 is now ready to operate. Observe that the line voltage rating shown on the back panel corresponds to available power, either 115 Vac, 50/60 Hz, or 230 Vac, 50/60 Hz.

SECTION III  
GENERAL DESCRIPTION

1. Introduction

Refer to Figure 1 (Page 4) for identification of the VC-2 controls and assemblies.

- Vacuum Gauge — Indicates the amount of vacuum being generated in centimeters of mercury (cmHg).
- Vacuum Adjust Knob — Controls the level of vacuum desired.
- Collection Bottles — Collect aspirated tissue from the collection tubing.
- Power Knob — Pull to turn power "ON," push to turn power "OFF."
- Storage Compartment Door Latch — Push latch and pull out to open the storage compartment.
- Pump/Motor Compartment Door Latch — Push latch and pull out to open the pump/motor compartment.

NOTE: The power cord can be stored by winding it around the cord wrap on the back panel of the unit.



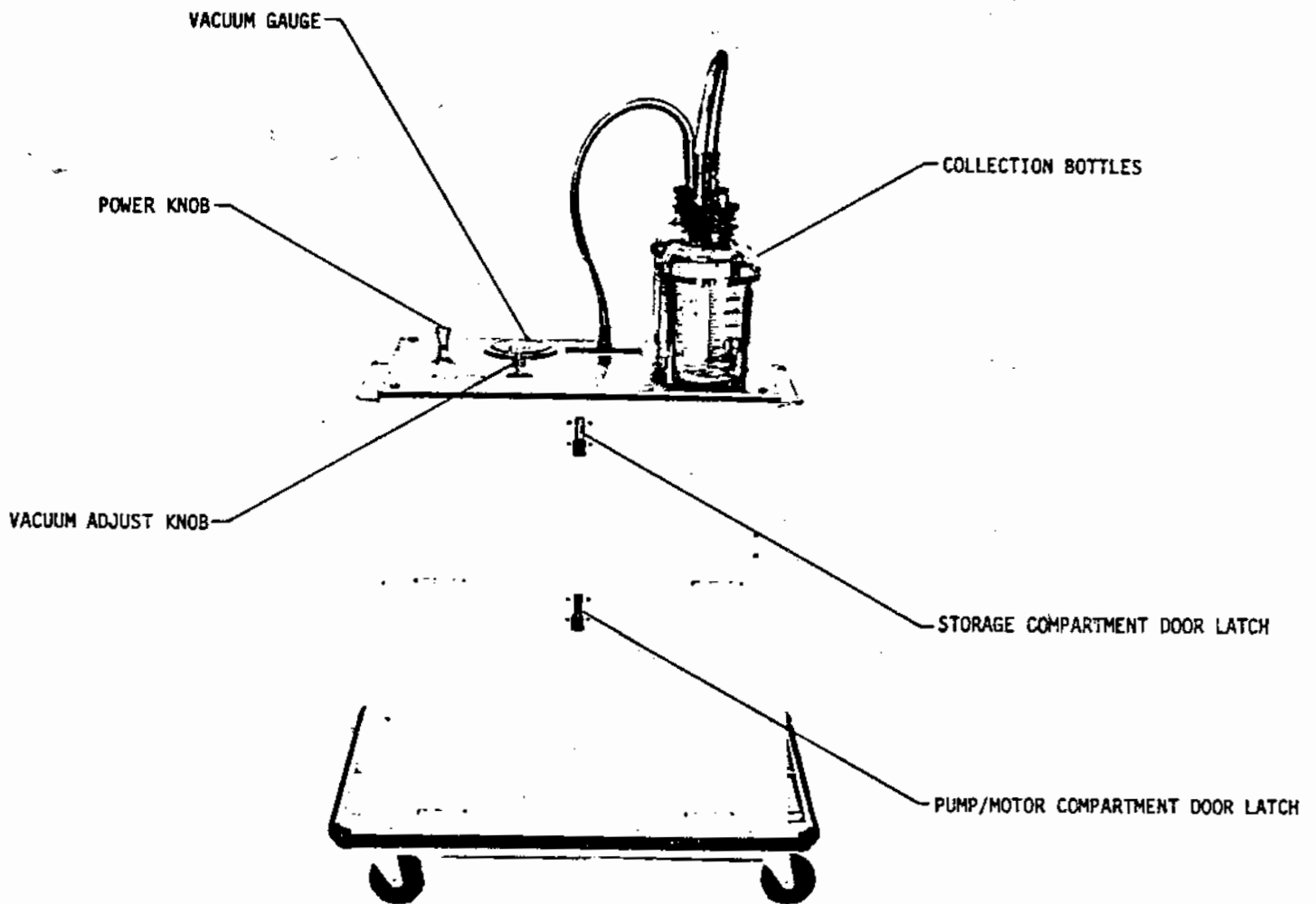


FIGURE 1. MODEL VC-2

## 2. Specifications

### Operating Voltage

115/230 Vac,  $\pm$  10%, 50/60 Hz

### Power Consumption

575 VA

### Leakage Current

Less than 100  $\mu$ A max

### Ground Resistance

Less than 0.10 ohms case to ground connection

### Motor Horsepower Rating

One-Quarter Horsepower

### Power Cord

18GA/3 conductor, Type S0, 10 ft. (304.80 cm) in length, Woodhead

85447 plug

### Dimensions

Length: 28 in. (71.12 cm)

Width: 19 in. (48.26 cm)

Height: 42 in. (106.68 cm)

### Weight

125 lbs. (56.70 kg)

### Shipping Weight

156 lbs. (70.80 kg)

### 3. Motor and Pump

The motor rotates a crankshaft within the pump. Connected to the crankshaft are two opposed piston rods with ends that drive flexible diaphragms alternately toward and away from the pump heads. Refer to Figure 2 (Page 7). These heads are fitted with synthetic rubber umbrella valves that allow flow through the chamber formed between each diaphragm and head.

Flow through the vacuum lines reaches the first pump head by passing through the collection hardware, which consists of the collection tubing, collection bottles, and safety trap. (Follow arrows on Figure 3.) The safety trap has a ball float shut-off that protects the pump from collecting an excessive amount of fluid. Flow through the trap is down the cap, past and around the ball float, up through the conical valve seat, and out to the pump inlet. The outlet of the first pump head is connected to the input of the second head. This second head discharges into an exhaust muffler which reduces noise.

### 4. Vacuum

The vacuum adjust knob is pre-set at the factory in the fully clockwise (closed) position for maximum vacuum. If a reduction of vacuum is desired, turn the knob counterclockwise, allowing air to enter the pump at the valve inlet. Air entering at the valve inlet reduces the vacuum level at the Vacurette® tip. To determine the maximum vacuum level at any particular setting, observe the vacuum gauge while completely occluding the intake opening of the collection bottle.

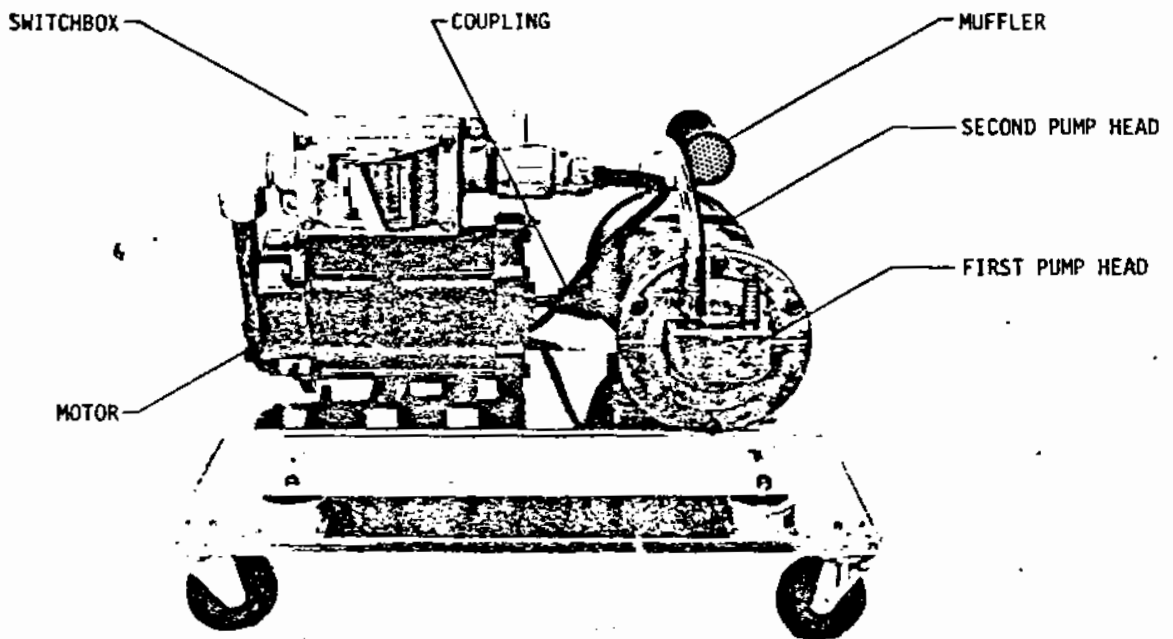


FIGURE 2. PUMP/MOTOR ASSEMBLY

Design considerations limit the lower vacuum settings. The maximum attainable vacuum will be approximately 73 cmHg (the green zone on the vacuum gauge) at sea level, when the vacuum adjust knob is turned fully clockwise (closed). There is a reduction of maximum vacuum by 2.6 cmHg per 1000 feet (8.5 mmHg per 100 meters) of elevation above sea level.

Vacuum-tight connections are assured when the tapered fittings and internal conductive rubber O-ring seals are properly connected and maintained. Proper sealing will maintain a consistent level of vacuum throughout the entire unit.

## SECTION IV

### OPERATION

To assure proper operation of the VC-2, follow the steps below:

(1) Power Connection

Attach the power cord to an appropriate, grounded power receptacle. The correct voltage, frequency, and current drain will be found on the electrical rating plate at the center rear of the unit. The VC-2 is used on 115 Vac, 50/60 Hz, in the U.S. In overseas models, the voltage rating is either 115 Vac, 50/60 Hz, or 230 Vac, 50/60 Hz.

(2) POWER Knob

The POWER knob is located on the top panel of the unit. Pull this knob "ON" to activate the motor for vacuum. Do not turn the power on when the vacuum gauge indicates the collection system has residual vacuum, because the unit will not start. To bleed off the vacuum, turn the vacuum adjust knob counterclockwise.

(3) Vacuum Check

Continuous vacuum is supplied to the Vacurette<sup>®</sup> tip while the pump and motor are in operation, unless otherwise controlled by the slip ring on the rotating handle of the collection tubing assembly. This slip ring is used to open and close the

orifice on the handle. The orifice is left open when the operator does not want vacuum at the Vacurette<sup>®</sup> tip.

To determine the maximum vacuum that is being generated, place a finger over the tubing inlet at the collection bottle. Continue to occlude the opening, and observe the vacuum gauge until it stabilizes. This vacuum level is the maximum vacuum level at the particular setting of the vacuum adjust knob.

Turn the vacuum adjust knob counterclockwise to decrease maximum vacuum and clockwise to increase maximum vacuum. Repeat this checking procedure after each knob adjustment.

SECTION V  
TROUBLESHOOTING

1. Overloads

The electric motor contains an internal thermal overload mechanism, which provides protection against overheating of the motor. If the motor starts to overheat, the overload protector stops the action of the motor and the pump. Whenever an overload occurs, the operator should turn power off, open the lower compartment, and allow sufficient time for the motor to cool. The motor will start up again when the ambient temperature has been reduced sufficiently.

2. Motor Functions/Inadequate Vacuum/No Vacuum

Turn the power "ON." Refer to the following troubleshooting check-out procedure and Figure 3 (Page 12) if:

- the motor functions but the vacuum gauge indicates that vacuum is below the appropriate level (the green zone on the vacuum gauge).
- the vacuum gauge gives an appropriate vacuum reading but there is apparently inadequate or no vacuum.

These symptoms indicate either a leak or blockage within the collection system. The letters in the following troubleshooting procedure denote specific connection points on Figure 3.



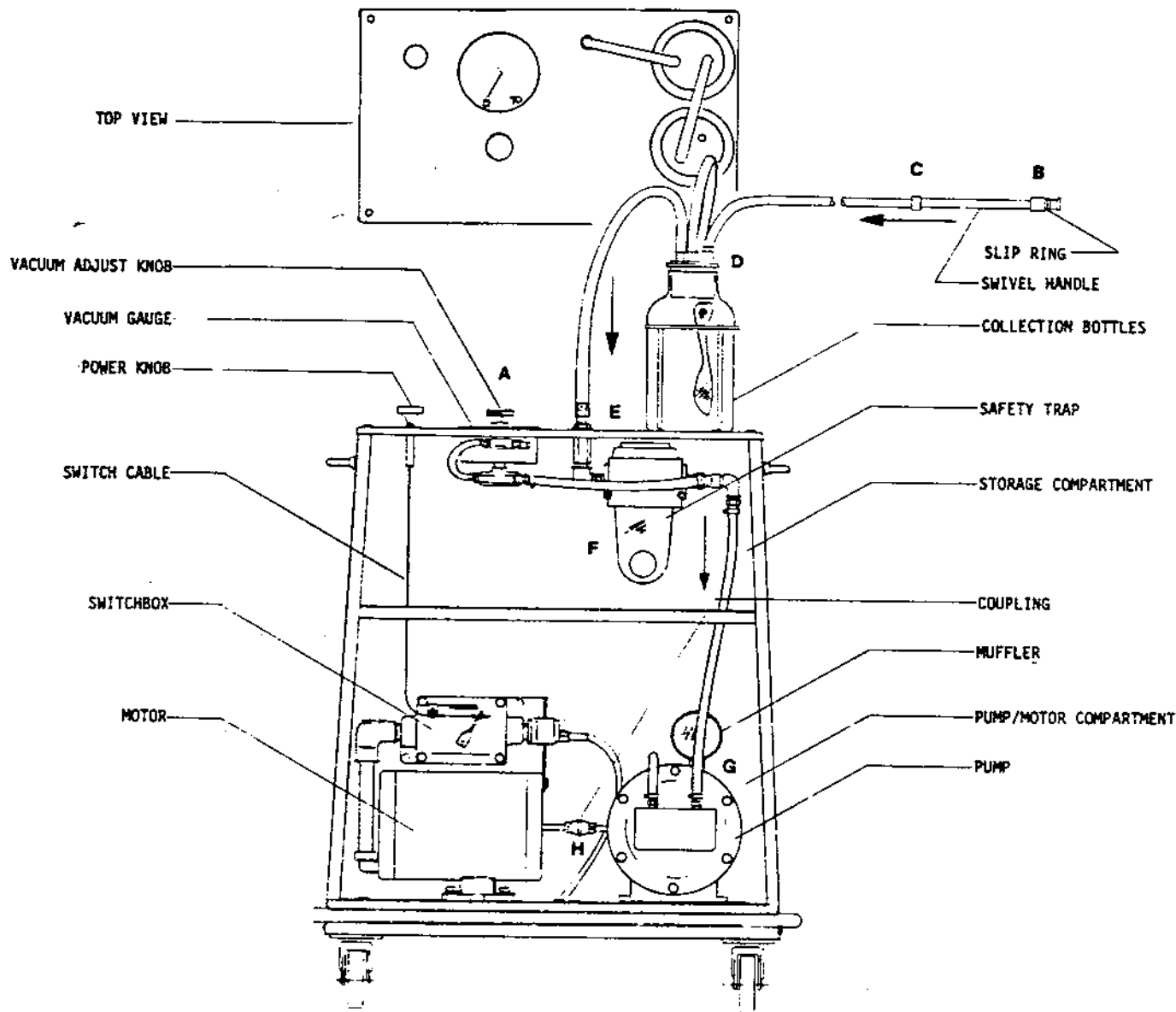


FIGURE 3. ELEMENTS OF THE VC-2

- (1) Verify that the lack of vacuum is not caused by improper vacuum adjust knob setting. Turn the vacuum adjust knob clockwise until it stops (A). Read the vacuum gauge and finger check\* suction at the Vacurette<sup>®</sup> tip. If the vacuum level is not adequate, go on to Step 2.
- (2) Examine the slip ring on the Vacurette handle (B). If the ring is worn or defective, the handle should be replaced or repaired. Read the vacuum gauge and finger check suction at the Vacurette tip. If the vacuum level is not appropriate, go on to Step 3.
- (3) The fitting between the Vacurette handle and the tubing should be checked for cracks and leaks (C). If no problem seems to exist, disconnect the Vacurette tubing assembly at the inlet to the first collection bottle (D). Examine the O-ring on the bottle top for wear. If it is defective, replace it. Read the vacuum gauge and finger check suction at the bottle opening. If the vacuum level is not appropriate, go on to Step 4.
- (4) Repeat Step 3 to check out second collection bottle. If the vacuum level is still not appropriate, go on to Step 5.
- (5) The leak or block can be identified and corrected by examining each section of the collection system between the second collection bottle and the pump. Disconnect collection tubing at the inlet fitting on the top panel of the unit (E). Finger

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\*Momentarily occluding the vacuum line or fitting with a finger to estimate the level of vacuum available at that particular point.

check this fitting and read the vacuum gauge. If the vacuum is not at maximum level, go on to Step 6.

- (6) Open the upper and lower compartments of the unit. Check the continuity of the vacuum line between the second collection bottle and the pump. Inspect for kinks, leaks, and obstructions along the tubing, and at each fitting. Examine carefully the safety trap and its float ball (F). Liquid will collect in the trap if the collection bottles overflow. The ball float will rise to the roof of the jar and reduce the vacuum. Any fluid in the trap must be removed. The trap should be disassembled by unscrewing the trap jar. Discard contents. Clean jar and float ball thoroughly. Check trap body for blockage of port openings. If no cause for blockage is found, leakage may be suspected. Check jar for cracks and leaks, the gasket for wear, and the jar fitting for looseness. Replace any defective parts. The jar with float ball should be rescrewed into the trap body. Check for firm jar seat against the trap body gasket to avoid leakage. If the vacuum level is still not satisfactory, after checking the top panel inlet fitting and reading the vacuum gauge, go on to Step 7.
- (7) Disconnect the tubing at the inlet fitting to pump head #1 (G). Attach a vacuum gauge known to be in good working condition to the pump head. If vacuum is appropriate according to this external gauge, then the pump is functioning well and the problem must be a faulty VC-2 vacuum gauge. The gauge should be replaced.

the tubing reconnected at the inlet fitting to the pump head, and the vacuum level checked. If the external vacuum gauge did not indicate the appropriate vacuum level, then the pump is defective. If so, the entire VC-2 unit should be returned to the factory for pump repair or replacement.

If the motor seems to be functioning, yet vacuum is still insufficient or non-existent, check the coupling between the motor and pump for cracks or breaks (H). If the coupling is defective, it should be replaced.

### 3. Coupling Replacement

Refer to Figure 6 (Page 27).

- (1) Turn power "OFF."
- (2) Disconnect power cord from the power source.
- (3) Disconnect the tubing between the pump and the safety trap at the inlet to the first pump head.
- (4) Remove the four screws around the perimeter of the switchbox cover and remove the cover.
- (5) Remove the eleven screws around the base of the cabinet.
- (6) Carefully disengage the strain relief fitting on the power cord by squeezing the fitting and pulling it out of the cabinet. The fitting should then be removed from the cord and the cabinet lifted off of the pump/motor assembly.

- (7) Remove the four screws (Item 23) on the welding (Item 1) to gain access to the four screws (Item 20) that attach the pump (Item 2) to the base plate (Item 12).
- (8) Remove the screws that attach the pump to the welding and then remove the pump.
- (9) Remove the faulty coupling (Item 4) and replace it.
- (10) Be sure new coupling is in line with the motor shaft.
- (11) After restarting the unit, check to see that the coupling remains in line with the motor and the pump. If the coupling has not been attached properly, misalignment noise will be detected. Should this be the case, the unit will have to be turned off, the coupling removed, and the coupling reattached.
- (12) Reverse steps 1-8 to return the unit to proper working condition.

In reattaching the switchbox cover, be sure that the switch lever straddles the switch mechanism so that the lever is swung right. Refer to Figure 4 (Page 19).

CAUTION: A THOROUGH TEST OF THE ENTIRE UNIT MUST BE MADE PRIOR TO BEGINNING ANOTHER SURGICAL PROCEDURE. Attach a Vacurette and aspirate 100 to 200 cc of water into the first collection bottle to verify the operating integrity of the VC-2 unit.

#### 4. Motor Malfunction

Turn power "ON." If motor does not function, check the power line connection at the wall outlet. Defective parts should be repaired

or replaced. If no problem is apparent, open the lower compartment to check the connection between the POWER switch and the motor. Check switch box and examine heater. If defective, replace.

CAUTION: THE FOLLOWING INFORMATION IS FOR QUALIFIED ELECTRICIANS ONLY.

For those with electrical experience and the necessary equipment, use a voltmeter to check presence of power. If power is present, check the power "ON" switch for defects using an ohmmeter. If no problems are found and the motor still does not function, the wiring connections inside the conduit box should be checked (see Figure 7, Page 29). The VC-2 cabinet will have to be removed. Turn power "OFF." To remove the VC-2 cabinet, proceed as follows:

- (1) DISCONNECT THE POWER CORD FROM THE POWER SOURCE.
- (2) Disconnect the tubing between the pump and the safety trap at the safety trap fitting.
- (3) Remove the eleven screws around the base of the cabinet.
- (4) Carefully disengage the strain relief fitting on the power cord, by rotating the nut and sliding it down the rear of the cabinet as the cabinet is being lifted off of the pump/motor assembly.
- (5) The VC-2 pump/motor assembly may now be examined.

If the problem still cannot be solved, the unit should be returned to the factory for repair.

the switch cover back and forth, you should hear the switch snapping as it opens and closes). Now tighten the four screws on the switch cover until cover is tight on the box.

- (3) Position the cable stops by swinging the switch lever to the right. Move cable stop #1 (which is loose on the wire) up to the lever and tighten the screw. Then move cable stop #2 toward the lever, allowing approximately 1/32" clearance, and tighten the screw.

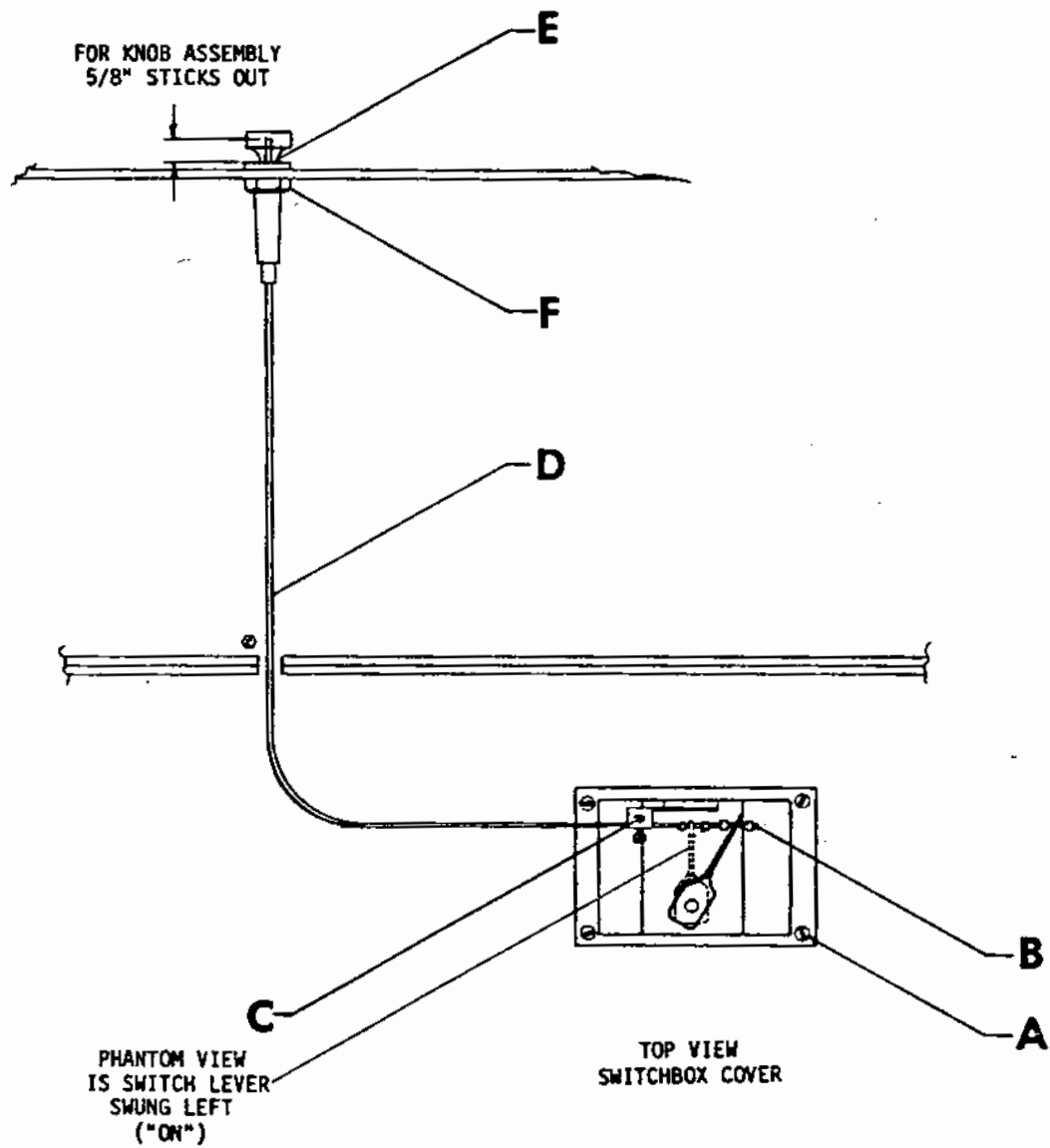


FIGURE 4. SWITCH CABLE REPLACEMENT



## 5. Switch Cable Replacement

If the power switch cable should malfunction due to a break or kink in the line, the cable will have to be replaced. Follow the steps below, and refer to Figure 4 (Page 19).

- (1) Use a flat-head screwdriver to remove the four screws around the perimeter of the switch box cover. Then remove switch cover for ease of disassembly (A).
- (2) Use a 1/16" Allen wrench to remove cable stops (B).
- (3) Loosen screw and remove shield from clamp. This will allow cover and cable to be separated (C).
- (4) Pull cable through shelf and liner (D).
- (5) Loosen set screw with 1/16" Allen wrench and pull knob off cable. Reassemble with proper alignment after cable is hooked up (E).
- (6) Unscrew nut. This will allow removal of switch cable from the cabinet (F).

To replace cable, reverse steps 3, 4, 5, and 6 of disassembly procedure. Note additional instructions below.

- (1) Do not tighten screws on cable stops until switch cover is secured (see Step 3).
- (2) To place switch cover on switch box, make sure the fork teeth straddle the switch toggle lever (to check, swing the lever on

SECTION VI  
CARE AND CLEANING

Trouble-free operation of the VC-2 is assured if the operator adheres to the following instructions:

- The ball float within the safety trap -- Clean with soap and water whenever any liquid is present. Be sure safety trap is dry before reinstalling it.
  
- The rubber bottle stoppers -- Lubricate stoppers with a small amount of silicone grease or petroleum jelly to permit easy insertion and removal.
  
- The VC-2 cabinet -- Clean any soiled areas with a small amount of soap and water and a soft cloth or sponge.

## VC-2 FINAL ASSEMBLY

C23-23177

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	C23-23044	VC2, ASSY, BASE ASSY	1
2	C23-23171	VC2, ASSY, CABINET	1
3	C23-23068	VC2, ASSY, TOP COVER	1
4	C23-23038	VC2, ASSY, FILTER & FITTINGS	1
5	A21-21210	VC2, ADJUSTABLE CABLE STOP	2
6	X20-51868	SCREW, SET HEX, SOCKET 8-32 x 1/8 NYLOCK	2
7	A20-20119	TUBING, CONDUCTIVE, 3/8 ID X 5/8 OD	2.5
8	X20-20349	HOSE CLAMP, 11/16 ID, SCREW TYPE	4
9	A21-21229	VC2, KNOB PULL-ON	1
10	16	SOC SET CUP PT. 8-32 X 1/8 SST	1
11	X20-51714	CABLE, 25" SHEATH 28" WIRE	1
12	29	JAM NUT, 3/8-24, STL CAD	1
13	31	LW, INT TOOTH, #3/8, STL CAD	1
14	A20-20868	WASHER, .050 THK .875 OD X .578 ID	2
15	A20-20874	NUT, HEX THIN 9/16-18	1
16	159	PHMS, SLOTTED, 10-32 X 3/8, SS	4
17	X20-52094	WASHER, NYLON #10	4
18	227	WASHER, FLAT, #10, SS	4
19	7	PHMS, PHIL, 8-32 X 1/4, SS	11
20	X20-20101	STRAIN RELIEFS, HEYCO SR-7P-2	1
21	A22-22190	VC2, LABEL, BOTTOM DOOR	1
22	A22-22074	LABEL, WARNING & PLUG	1
23	A22-22037	VC2, NAMEPLATE, ELECTRICAL	1
24	11	PHMS, PHIL, 4-40 X 1/4, SS	4
25	294	KEP NUT 4-40 SS	4
26	5	FIL HD MS, 1/4-20 X 2-1/2, STL CAD	2
27	X20-20715	PLUG, GRNDG HOSPITAL GRADE	1
28	A20-52345	VC2, LABEL, CSA	1
29	A22-22198	VC2 LABEL, FILTER & O-RING	1
30	423-23169	VC1, ASSY, VC TO BOTTLE HOSE	

VC-2 ASSEMBLY

<u>Item</u>	BBE <u>Part No.</u>	<u>Description</u>	<u>Qty.</u>
	X17-52953	VC2, OPERATION & SERVICE MANUAL	1
	C23-23177	VC2, ASSY, FINAL	1
	X23-23180	VC2, ASSY, ACCESSORY KIT	1
	X28-28000	VC2, SHIPPING CONTAINER	1

SECTION VII  
PARTS LISTS & ASSEMBLY DRAWINGS

Parts lists appear in this section in the following order:

1. VC-2 Assembly
2. VC-2 Final Assembly\*
3. Base Assembly\*
4. Pump Assembly\*
5. Motor & Switch Electrical Pictorial\*
6. Top Cover Assembly\*
7. Safety Trap Assembly\*
8. Cabinet Assembly\*
9. VC-2 Bottle Basket Assembly

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\*Illustrated

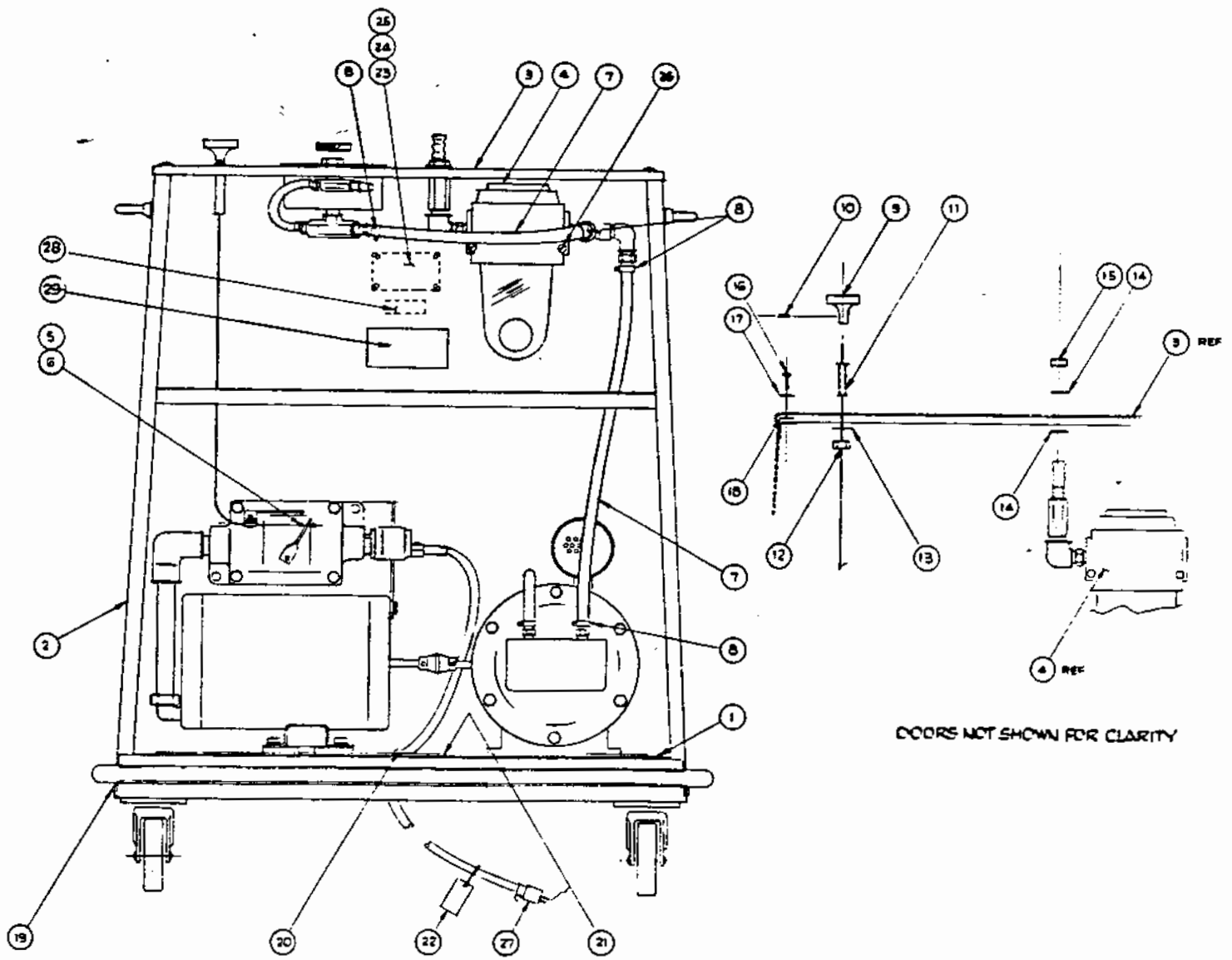


FIGURE 5. VC-2 FINAL ASSEMBLY

BASE ASSEMBLY

C23-23044

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	G23-23090	VC2, ASSY, WELDING MOTOR & PUMP MTG	1
2	C23-23064	VC2, ASSY, PUMP ASSY	1
3	C30-30017	VC2, ASSY, MOTOR & SWITCH	1
4	X20-20162	COUPLING, LORD J1211-4-14	1
7	A21-21286	VC2, MOTOR SPACER	2
9	A21-21718	VC2, MOTOR OUTLET SPACER	1
12	B23-23056	VC2, ASSY, BASE PLATE ASSY	1
13	A23-52230	VC2, ASSY, SW BOX MTG BRKT-WELD	1
15	X20-52158	SCREW, CAP HEX HD 1/4-20 X 1 1/2	1
16	3	HHCS, 1/4-20 X 3/4, SS	4
17	2	HHC, 1/4-20 X 1, SS	5
18	17	FLT WASH, 1/4 X 11/16OD, SS	14
19	18	LW, MED SP LIT, 1/4, SS	11
20	22	HEX NUT, 1/4-20, SS	10
23	4	HHCS, 1/4-20 X 1/2, SS	4
24	X20-53518	SCREW, SET, HEX SOCKET CUP PT 1/4-20 x 3/16 STL BLACK OXIDE	2

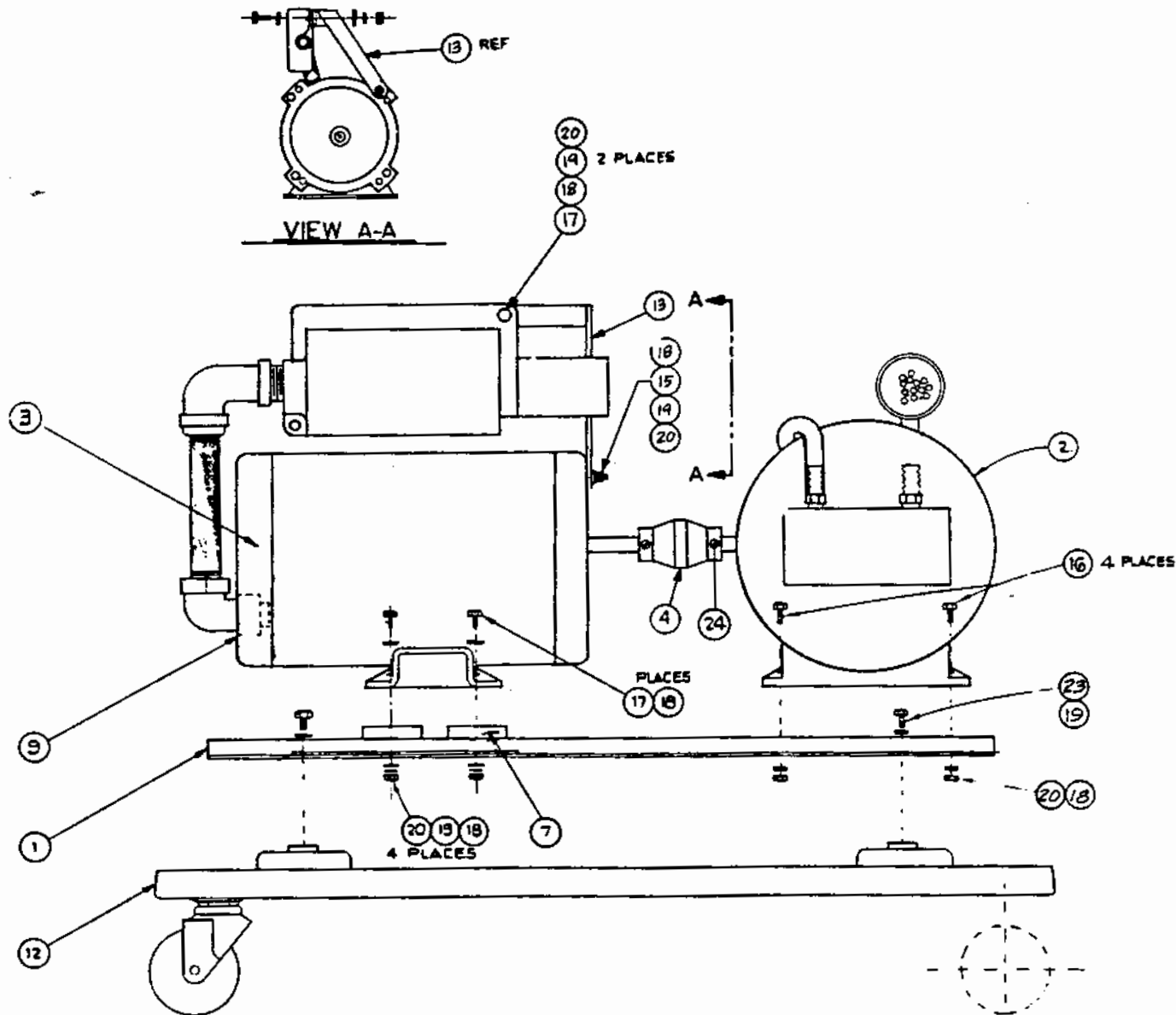


FIGURE 6. BASE ASSEMBLY



PUMP ASSEMBLY

C23-23064

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	C21-21245	VC2, VAC PUMP HOUSING	1
2	A21-21250	VC2, AXLE-VACUUM PUMP	1
3	B21-21252	VC2, PISTON	2
4	A21-21214	VC2, TUBE FITTING THD	3
5	B20-20873	DIAPHRAGM, NEOPRENE	2
6	A21-21295	VC2, DIAPHRAGM BACK UP PLATE	2
7	B23-23036	VC2, ASSY, MUFFLER	1
8	A23-23060	VC2, VC5, ASSY, PUMP HEAD	2
9	B23-23062	VC2, ASSY, ECC SHAFT & ROD ASSY	1
10	X20-20077	VENT PLUG CJ-41-5	2
11	X20-20349	HOSE CLAMP, 11/16ID, SCREW TYPE	2
12	X20-20160	BEARING, BALL, 77-R-10 N.D.	2
13	X20-20161	RETAINING, RING, 5100-62	3
14	A20-20119	TUBING, CONDUCTIVE, 3/8ID X 5/8OD	1.25
15	12	FHMS PHIL 10-32 X 1/2, SS	14
16	2	HHCS 1/4-20 X 1, SS	12
17	18	LN MED SPLIT 1/4, SS	12

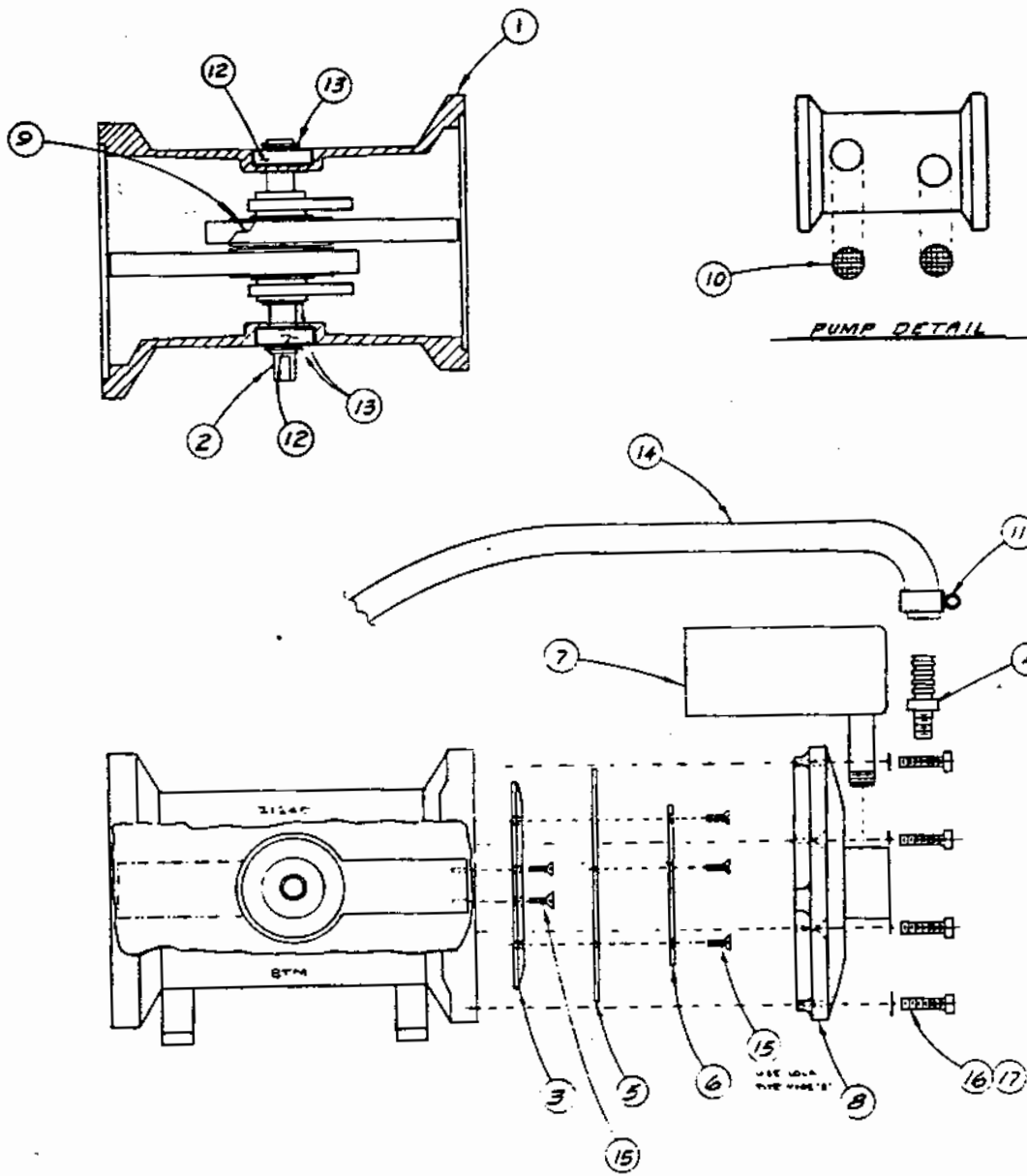


FIGURE 7. PUMP ASSEMBLY

MOTOR & SWITCH  
ELECTRICAL PICTORIAL

C30-30017

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	A14-14017	MTR, EXP. PROOF 1/4 H.P.	1
2	X16-16017	POWER CORD, 18/3 SO 600V 14	20
3	X20-20089	SWITCH, G.E. CR101H700J	1
4	X20-51618	HEATER, G.E. CR1234 6.80A	1
5	A20-20098	ELBOW, 90DEG, CL I, GRP C, EL296	1
6	X20-51715	NIPPLE, PIPE, L/2 X 5-1/2 LG	1
7	A20-20103	CONN, CORD, EBY2647	1
8	X20-20169	BUSHING, REDUCING 3/4 X 1/2, RE21	1
9	X20-20533	WIRE CONN, PRESS TYPE	2
12	A21-21718	VC2, MOTOR OUTLET SPACER	1
	X20-20881	TERMINAL, SOLDERLESS, R5109	1
	A23-23052	VC2, ASSY, SWITCH BOX COVER	1

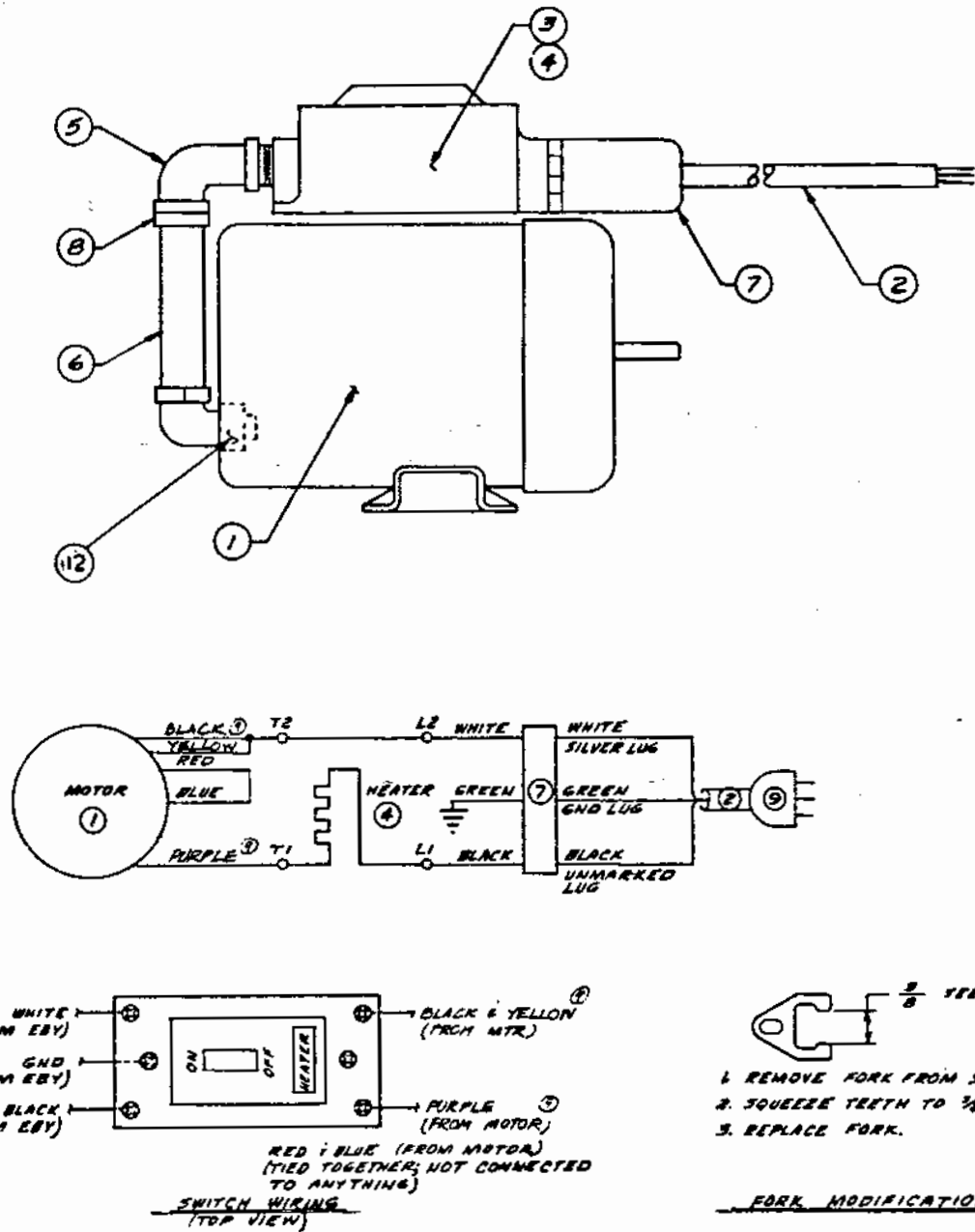


FIGURE 8. MOTOR & SWITCH ELECTRICAL PICTORIAL

## TOP COVER ASSEMBLY

C23-23068

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	C21-21173	VC2, TOP COVER	1
3	A22-22042	VC2, LABEL, WARNING	1
7	A22-22043	VC2, NAMEPLATE	1
13	11	PHMS, PHIL, 4-40 X 1/4, SS	6
14	294	KEP NUT 4-40 SS	6
15	B20-20307	GAUGE, VACUUM	1
16	X20-20300	TEE, 1/4 F X 1/4 F X 1/4 FPT	1
17	X20-20301	NIPPLE, 1/4 HOSE ID X 1/4 MPT	2
18	A21-51965	VC7, KNOB MODIF-NEEDLE VALVE	1
19	X20-51982	EXHAUST MUFFLER, 1/4 MPT	1
20	A22-52903	VC2, 5, LABEL, VACUUM ADJUST	1
21	A21-52495	WASHER, FLAT 1/2 ID X 3/4 OD X .060 TK	1
22	A21-21671	VC2, DELRIN SPACER	1
23	A21-21214	VC2, TUBE FITTING THD	1
26	X20-20635	23157 & 8, PVC TUBING, 7 & 8 MM F-SET	8 inches

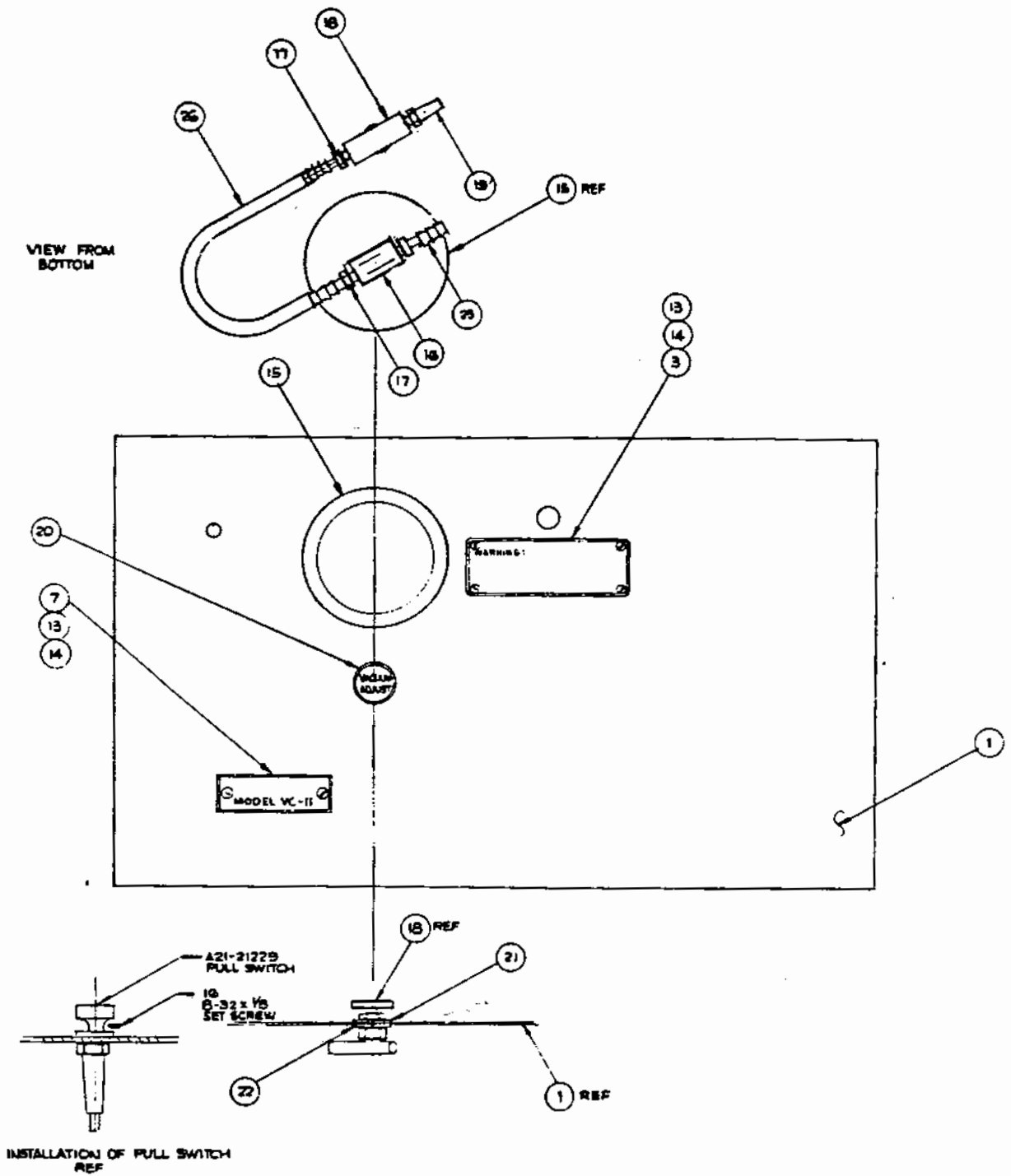


FIGURE 9. TOP COVER ASSEMBLY

## SAFETY TRAP ASSEMBLY

C23-23038

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	B21-21215	VC2, TUBING ADAPTOR FOR FILTER	1
2	A21-21657	VC2, BALL SEAT RETAINER	1
3	A21-21658	BALL SEAT	1
4	A21-21659	VC2, FILTER STRAINER, FIBERGLASS	3
5	A21-21660	FILTER SCREEN	1
6	A21-21802	VC2, PERF SLUM SPLIT RING	1
8	X20-20087	FILTER TRAP, NORGREN F02325M3TA	1
9	X20-20284	NIPPLE, CLOSE, 1/4 X 1/4 IMP	1
10	X20-20285	BUSHING, 3/8 MPT X 1/4 FPT	2
11	X20-20286	TEE, 1/4 FPT X 1/4 MPT X 1/4 FPT	1
12	X20-20287	ELBOW, 1/4 F X 1/4 F	1
13	X20-20304	ELBOW, STREET 1/4 MPT X 1/4 FPT	1
14	X20-20315	BALL, SPONGE	1
15	X20-20507	FILTER GASKET DWS 568-038	1
16	421-21214	VC2, TUBE FITTING THD	2

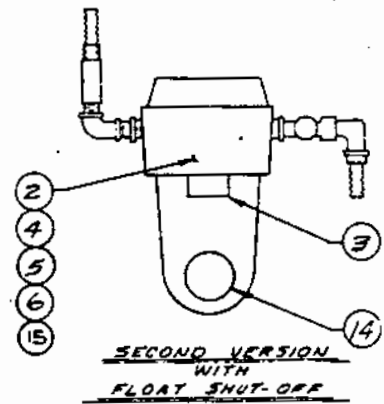
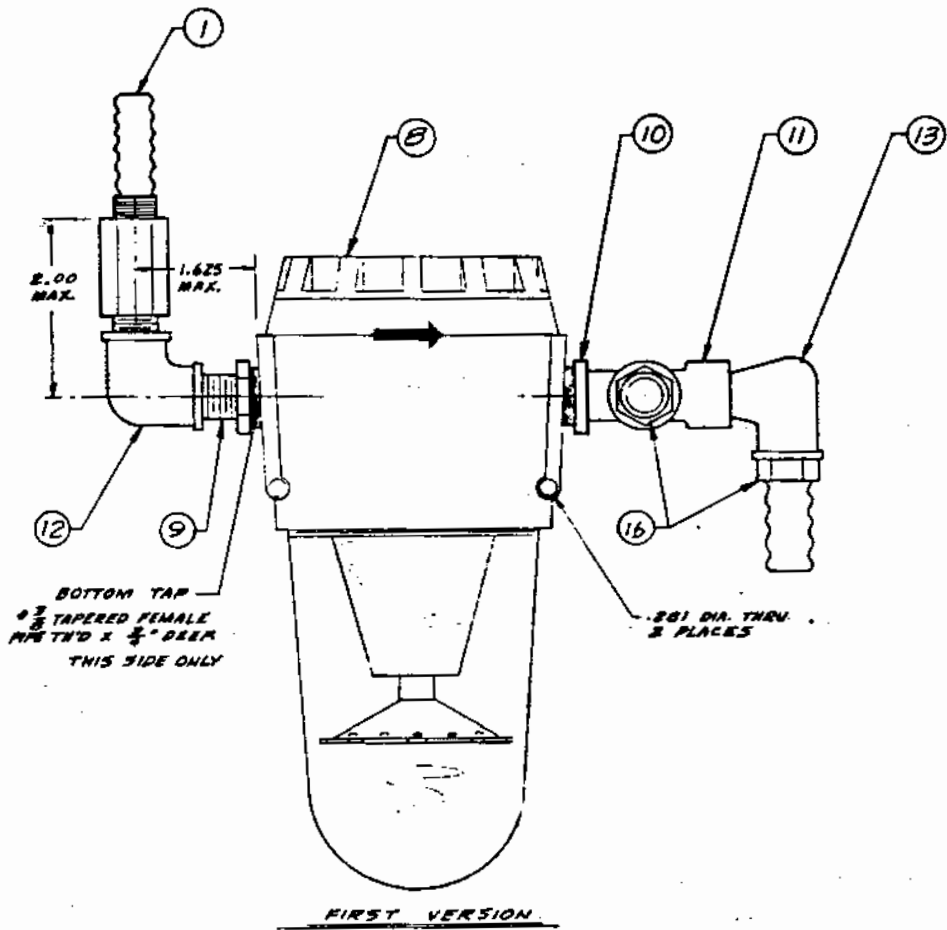


FIGURE 10. SAFETY TRAP ASSEMBLY



CABINET ASSEMBLY

C23-23171

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
1	A20-20180	EXTRUSION, RUBBER BUMPER	78 inches
2	A20-20872	SCREW, SHOULDER, STL, CAD PLATED	1
3	A21-21211	VC2, MTG BRKT, FILTER TRAP	1
4	A21-21247	VC2, SPACER-HINGE DOOR	1
5	A21-21329	VC2, KNEE HINGE MODIFIED	1
6	A21-21471	VC2, SPACER BUMPER	14
7	A21-21472	VC2, BUMPER RAIL	2
8	A21-21473	VC2, BUMPER-SIDE	2
10	B20-21156	VC2, NOISE DAMPENERS-SIDE	2
11	B20-21157	VC2, NOISE DAMPENERS-BACK	1
12	B20-21158	VC2, NOISE DAMPENERS-DOOR	1
13	B20-21159	VC2, NOISE DAMPENERS-TOP	1
14	B21-21178	VC2, DOOR-TOP	1
15	B21-21179	VC2, DOOR-BOTTOM	1
16	B21-21233	VC2, LINER, INTERMEDIATE SHELF	1
17	C23-23043	VC2, ASSY, WRAP-AROUND	1
18	X20-20093	HANDLE, NOVATRONX 10365-1032-25	2
19	X20-20185	FERRULE, BRASS NICKEL PLATE	4
20	X20-20577	WEATHER STRIP, 1/2W X 1/8 THK	As Required
21	X20-20875	SNAPWELL LATCH, HARTWELL	2
22	07	PHMS, PHILLIPS, 8-32 x 1/4 SST	14
23	159	PHMS, PHILLIPS 10-32 x 3/8 SST	4
24	X20-20219	WASHER, FLAT, FENDER #10	4
25	227	WASHER, FLAT #10	2
26	8	PHMS, PHILLIPS 8-32 x 3/8 SST	1
27	X20-52156	BHMS, HEX SOCKET, 4-40x 3/8 SST	8
28	213	NUT, KEPS #4	8
29	130	PHMS, PHILLIPS, 6-32 x 1/4 SST	2
30	215	NUT, KEPS, #8	14
31	38	PHMS, PHILLIPS, 8-32 x 1/2 SST	12
32	56	NUT, KEPS #6	12
33	27	NUT, KEPS, HEX #10	2

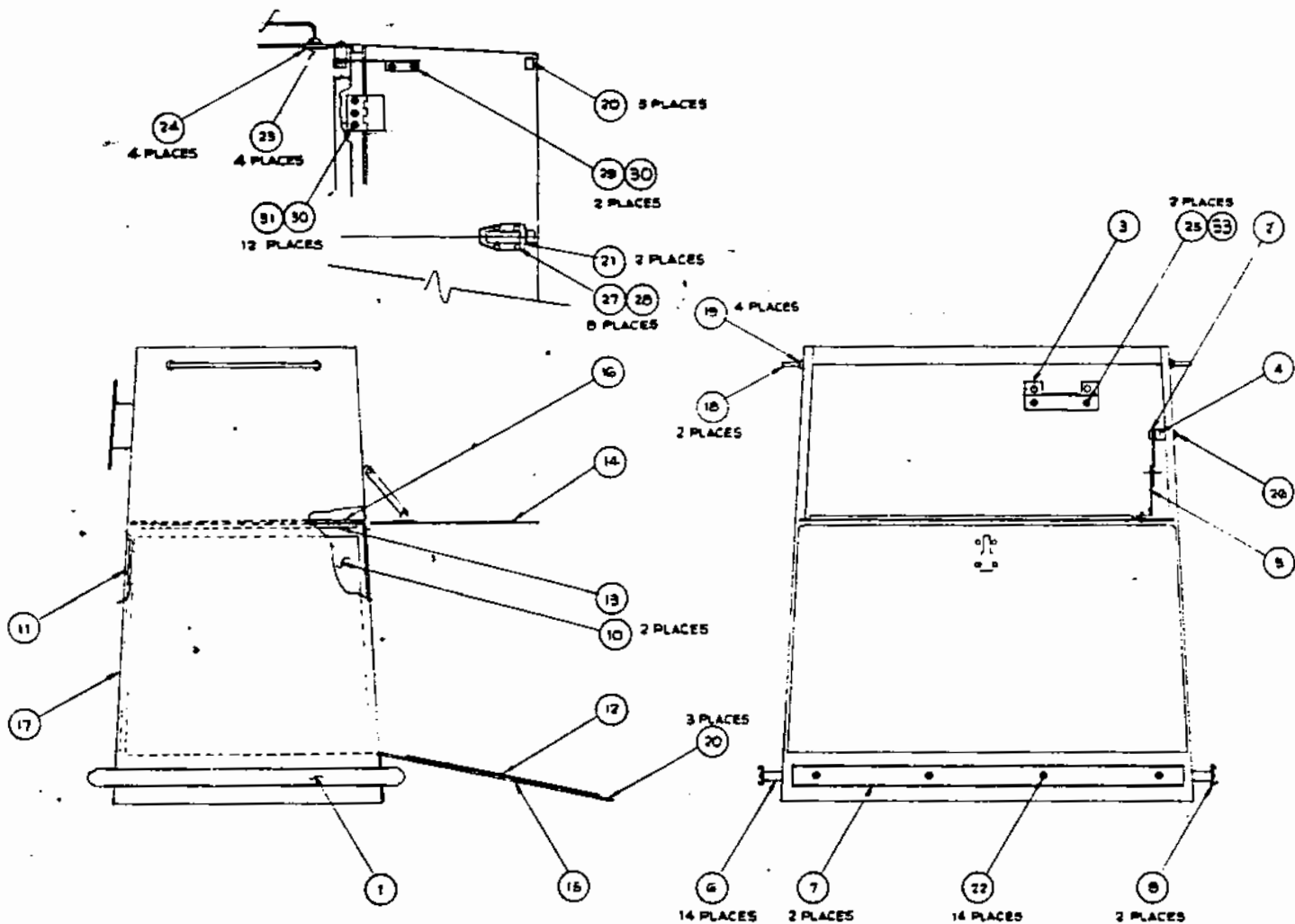


FIGURE 11. CABINET ASSEMBLY

VC-2 BOTTLE BASKET ASSEMBLY

X23-23179

<u>Item</u>	<u>BBE Part No.</u>	<u>Description</u>	<u>Qty.</u>
	A22-22189	VC2, LABEL, BOTTLE TOP	1
	A23-23136	VC2, ASSY, BOTTLE TOP MOLDED RUB	1
	B23-23080	VC2, ASSY, BOTTLE BASKET	1
	X20-20178	BOTTLE, 1400CC, MCKESSON	1
	X20-20518	BAG, POLY 2 X 7	1
	X20-20744	FEET, RUBBER, ALASCO #4161	4
	21163	PERMEABLE GAUZE SACK	1.1
	226	WASHER, FLAT #8, SS	2
	23	WING NUT, 10-32, SS	2

SECTION VIII  
REPLACEMENT PARTS & ACCESSORIES

- Each VC-2 unit is supplied with collection bottles, tubing, and a set of Vacuettes<sup>®</sup>.

Replacement parts and accessories are listed on the following pages.

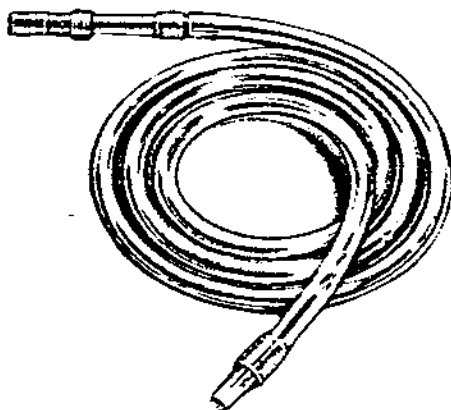
Item

VACURETTES®

<u>Sizes</u>	<u>Part No.</u>
8mm straight	21655
9mm straight	21413
10mm straight	21414
11mm straight	21415
12mm straight	21416
8mm curved	20317
9mm curved	21552
10mm curved	21553
11mm curved	21554
12mm curved	21555

DISPOSABLE COLLECTION SETS (Part No. 23116)

(Fits 8 to 12mm Vacuettes® and F Vacurette® Tips 4 to 8mm)



Item

**VACURETTES® F SET**

(Set includes Vacurette® F Tip attached to collection tubing)

<u>Sizes</u>	<u>Part No.</u>
4mm set	23139
5mm set	23138
6mm set	23135
7mm set	23157
8mm set	23158

**VACURETTE® F TIP**

(Includes fitting for Swivel Handle #23127 or Disposable Collection Set #23127)

<u>Sizes</u>	<u>Part No.</u>
4mm F Tip	21663
5mm F Tip	21664
6mm F Tip	21665
7mm F Tip	21744
8mm F Tip	21745

**ENDOMETRIAL BIOPSY VACURETTE® KIT**

(Kit includes mailing cap and bag)

Part No.  
23214

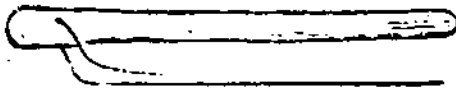
**ENDOMETRIAL BIOPSY VACURETTE® ASPIRATION HOSE**

(Six feet of hose with bottle fitting)

Part No.  
23224

Item

LAMINARIA DIGITATA TENT



Small  
Medium  
Large

Part No.

23144S  
23144M  
23144L

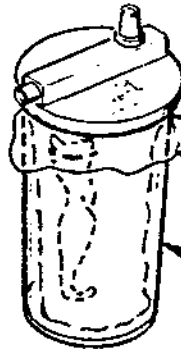
PERMEABLE GAUZE SACKS

(10 sacks per package)



21163

DISPOSA-BOTTLE AND TOP ASSEMBLY



Gasket

20497

Plastic Disposable Bag  
(100 per Package)

20498

Disposa-Bottle Only

20499

MALE HOSE FITTING

(without o'ring)



21218-B

FEMALE HOSE FITTING

(with o'ring)



Conductive Rubber O'Ring

21219-B

20270

METAL SWIVEL HANDLE

(complete assembly)



Slip Ring

23127

Threaded Stop Ring

21651

Metal Nut

21652

Metal Fitting

21653

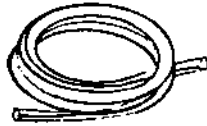
21654

Item

Part No.

CONDUCTIVE PLASTIC HOSE

21387



9 Ft. Long  
Without Fitting

CONDUCTIVE HOSE

(with metal handle # 23127, and metal fitting # 21218—B)

23039-B



GLASS BOTTLE

20178

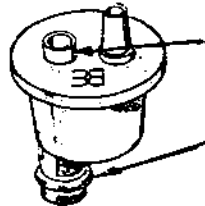


1400cc

BOTTLE TOP

(complete with fittings and o'ring)

23136



Conductive Rubber O'Ring

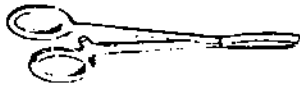
20270

Rubber O'Ring

20083

MULTI-TOOTH TENACULUM

20238






cabot medical


***Operations Manual***

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 **BERKELEY**<sup>TM</sup>  
**VACUUM  
CURETTAGE  
SYSTEMS**

# *Operations Manual*

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 **BERKELEY™**  
**VACUUM  
CURETTAGE  
SYSTEMS**

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Berkeley™ Vacuum Curettage Systems  
Operations Manual  
Cabot Medical Corporation  
2021 Cabot Boulevard West  
Langhorne, Pennsylvania 19047 U.S.A.

Berkeley™ Vacuum Curettage Systems have been designed to safely and rapidly evacuate the products of the first trimester of pregnancy. These systems enable a significant reduction in blood loss, myometrial damage and anesthesia requirement.

All Berkeley™ Vacuum Curettage Systems are equipped with a dual collection bottle system and a safety trap with automatic vacuum restriction. A high capacity, double diaphragm pump and vacuum system reaches optimum operating vacuum in about 5 seconds. The pump and motor are designed to require only minimal maintenance. Each VC system comes complete and ready to operate.

#### **VC-2**

The Berkeley™ VC-2 high performance model meets hospital operating room safety requirements and is designed for the ultimate in reliable service in a volume usage environment. The construction is rugged with stainless steel top, baked enamel sides and a protective rubber bumper. Rubber wheels are included for mobility and a storage compartment for convenience. A cord-wrap is provided on the back panel.

#### **VC-5**

The Berkeley™ VC-5 is a compact model designed for minimal space requirements and easy transport between facilities. The unit is equipped with carrying handles, mounted on rubber wheels, and easily rolls under tables or counters for storage. The stainless steel top and baked enamel sides are durable and easy to clean. A cord-wrap is provided on the back panel.

#### **VC-7**

The Berkeley™ VC-7 is designed to complement any clinical environment. Modern cabinet design features recessed collection bottles, a molded instrument tray on top and a storage compartment for supplies and accessories. Rubber wheels are included for mobility. The VC-7 is an extremely quiet operating model. A cord-wrap is provided on the back panel.

All references to Berkeley™ Bio-Engineering are likewise a reference to Cabot Medical Corporation in the context of this publication.

## PREOPERATIVE ASSEMBLY

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1. Open the shipping carton and remove the contents carefully, as some of the components are fragile. Collection bottles, hoses, and other accessories may be shipped in the unit's storage compartment or in a separate carton.
2. Verify that the line voltage rating shown on the back panel corresponds to the available power, either 115V AC 60 Hz, or 230V AC 50 Hz, and that the power receptacle to be used is grounded.
3. The VC-2 and VC-5 bottle holders must be attached to the top panel (VC-7 bottle holders are built-in).

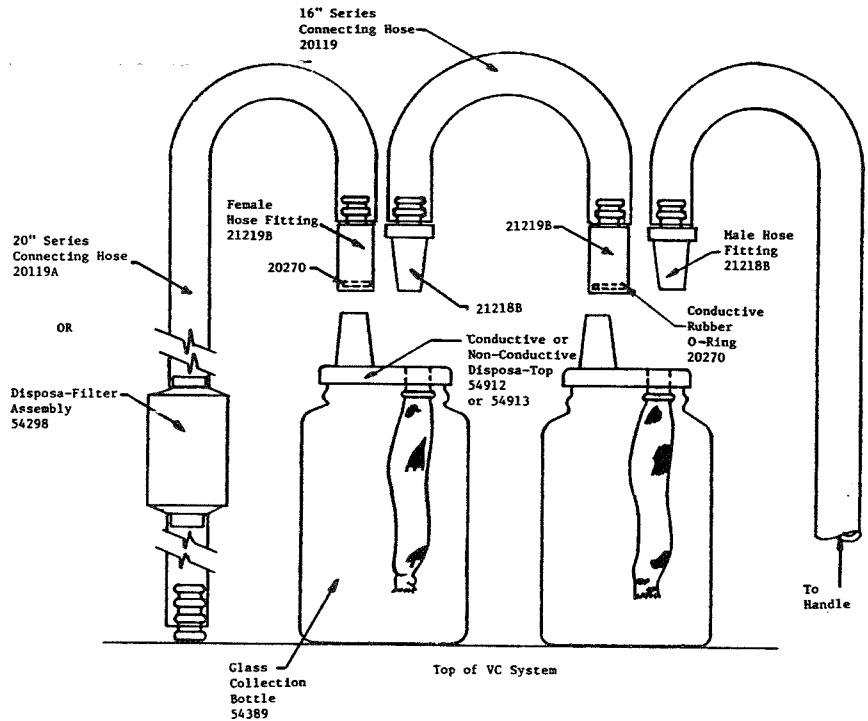
Insert the mounting screw — welded to the bottom of each bottle holder — into the top panel. Be sure that the secondary stabilizing post is inserted into the second hole on the top panel. Secure the mounting screws beneath the top panel using the lockwashers and wingnuts provided.

4. Place the collection bottles into the bottle holders and connect the tubing as shown in Collection System Hookup Diagram.
5. Select the appropriate Vacurette® and connect it to the collection tubing handle assembly.

The VC System is now ready to operate.

“Vacurette”® is a registered trademark of Cabot Medical Corporation.

**PRELIMINARY INSTRUCTIONS**



**COLLECTION SYSTEM  
HOOKUP DIAGRAM  
FIG — 2.10**

- \* Disposa-Filter is NON-CONDUCTIVE and should NOT be used on systems operated in an explosive atmosphere. Disposa-Filter should be replaced whenever the filter becomes soiled or clogged. Operating the system with a clogged filter can lead to vacuum deficiency and possible overheating and permanent motor damage.
- \*\* The white Disposa-Top, P/N 54912, is NON-CONDUCTIVE and should NOT be used on systems operating in an explosive atmosphere. Use the black, conductive Disposa-Top, P/N 54913, when operating in an explosive atmosphere.

## VACUUM OPERATION

---

The maximum attainable vacuum, with the vacuum adjust valve completely closed (fully clockwise), at sea level, is approximately 73 cm Hg. There is a reduction of vacuum by 2.6 cm Hg per 1,000 feet (8.5 mm Hg per 100 meters) of elevation above sea level.

The vacuum adjust knob is pre-set at the factory in the fully *clockwise* (closed) position for maximum vacuum. If a reduction in vacuum is desired, turn the knob *counterclockwise*. To determine the maximum vacuum level available at any particular setting, turn the unit on and observe the vacuum reading on the gauge while completely occluding the intake opening of the collection bottle.

Vacuum-tight connections are assured when the collection system tapered fittings are properly connected and maintained. Proper sealing will maintain a consistent vacuum level throughout the system.

**Important:** If, when the system is "off", the vacuum gauge indicates the collection system has residual vacuum, bleed off the vacuum by turning the vacuum adjust knob *counterclockwise* before turning the power "on" or the pump motor will not start.

### Vacuum Check

Continuous vacuum is supplied to the Vacurette® tip while the pump and motor are in operation, unless otherwise controlled by the slip ring on the rotating handle of the collection tubing assembly. This slip ring is used to open and close the orifice on the handle. The orifice is left open when the operator does not want vacuum at the Vacurette® tip.

To determine the vacuum that is being generated, place a finger over the inlet at the end of the hose and handle system of the collection bottle. Continue to occlude the opening and observe the vacuum gauge until it stabilizes. The level shown on the gauge is the maximum vacuum level at the particular setting of the vacuum adjust knob. Turn the vacuum adjust knob *counterclockwise* to decrease vacuum, or *clockwise* to increase vacuum. Verify that the vacuum gauge has stabilized after each knob adjustment before applying the system in a procedure.

## TROUBLESHOOTING

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### Overloads

Unless operating under conditions of very high ambient temperature and little or no ventilation, the motor should not overheat before one hour of continuous operation. Prolonged operation such as this is highly unlikely; nevertheless, the electric motor contains an internal thermal overload mechanism to protect against motor damage by shutting down the motor and pump if the motor begins to overheat. In the Model VC-2, the thermal overload protection is in the explosion proof switch.

When an overload occurs, the operator should turn the system power switch "Off", open the motor compartment door, and allow sufficient time for the motor to cool. The motor will start up again when its temperature has been reduced sufficiently. The motor is still too hot if it does not start up when the power switch is "On".

### No Motor Function

If the motor does not function when the power is turned on and the motor is not potentially overheated, check the electrical connection at the wall socket. Examine the plug and cord for wear. Worn parts should be repaired or replaced. If no problem is apparent, open the motor compartment and check the connection between the power supply and the motor. Contact Cabot Medical Corporation Service Department for further assistance.

### Insufficient Vacuum

If the motor functions, but the vacuum gauge indicates insufficient vacuum (vacuum level is below the green zone on the gauge), or if the vacuum gauge reads appropriately (in the green zone) but little or no vacuum is present at the Vacurette® tip, then there is either a leak or blockage within the collection system. The following troubleshooting procedure is recommended.

Step 1. Verify that the lack of vacuum is not caused by improper vacuum adjust knob setting. Turn the vacuum adjust knob clockwise until it stops. Read the vacuum gauge and fingercheck\* suction at the Vacurette® tip. If the vacuum level is not adequate, go on to Step 2.

\* Momentarily occluding the vacuum line or fitting with a finger to estimate the level of vacuum available at that particular point.



## TROUBLESHOOTING

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- Step 2. Examine the slip ring on the Vacurette® handle. If the ring is worn or marred, the handle should be replaced or repaired. Read the vacuum gauge and fingercheck suction at the Vacurette® tip. If the vacuum level is not adequate, go on to Step 3.
- Step 3. The connection between the Vacurette® handle and the hose should be checked for cracks and leaks. If no problem seems to exist, disconnect the Vacurette® hose assembly at the inlet to the first collection bottle. Examine the O-Ring fitting and examine the Disposa-Top for wear. If either of these are worn, replace them. Read the vacuum gauge and fingercheck\* suction at the bottle opening. If the vacuum level is not adequate, go on to Step 4.
- Step 4. Repeat Step 3 to check out second collection bottle. If the vacuum level is still not adequate, go on to Step 5.
- Step 5. Disconnect collection hose (or Disposa-Filter) at the inlet fitting on the top panel of the unit. Fingercheck this fitting and read the vacuum gauge. If the gauge reads maximum, the Disposa-Filter or hose should be replaced. If the vacuum is *not* at maximum level, proceed to Step 6.
- Step 6. Open the upper and lower compartments of the unit. Check the continuity of the vacuum line between the second collection bottle and the pump. Inspect for kinks, leaks, and obstruction along the tubing, and at each fitting. Examine carefully the safety trap and its float ball. Liquid will collect in the trap if the collection bottles overflow. The float ball will rise to the roof of the jar and reduce the vacuum. Any fluid in the trap must be removed. The trap should be disassembled by unscrewing the trap jar. Discard contents. Clean jar and float ball thoroughly. Check trap body for blockage of port openings. If no cause for blockage is found, leakage may be suspected. Check jar for cracks and leaks, the gasket for wear, and the jar fitting for looseness. Replace any worn parts. The jar with float ball should be reassembled into the trap body. Check for firm jar seat against the trap body gasket to avoid leakage. Fingercheck the top panel inlet fitting again, reading the vacuum gauge, and if the vacuum level is still not satisfactory, go on to Step 7.

## **CONDUCTIVE HOSE STERILIZATION PROCEDURE**

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### **STEAM STERILIZATION**

1. Immerse the hose in a medical grade detergent and water solution for ten (10) minutes.
2. Flush the hose thoroughly, first with cold tap water, then with distilled water.
3. Coil the hose loosely with the conductive stripe to the inside, and wrap the coil in a surgical wrap. Do *NOT* coil the tubing tightly, or allow it to kink; otherwise the hose may develop stress cracks and lose conductivity.
4. Autoclave at 250°F (121°C) for ten (10) minutes. Follow the autoclave manufacturer's instructions.

The hose will normally turn cloudy during the sterilization process. This cloudiness will disappear as the wrapped hose returns to room temperature.

### **CHEMICAL DISINFECTION**

1. Immerse the hose in a medical grade detergent and water solution for ten (10) minutes.
2. Flush the hose thoroughly, first with cold tap water, then with distilled water.
3. Immerse the hose in cold sterilizing solution for at least thirty (30) minutes.
4. Flush the hose with sterile saline solution.

### **GAS STERILIZATION**

1. Immerse the hose in a medical grade detergent and water solution for ten (10) minutes.
2. Flush the hose thoroughly, first with cold tap water, then with distilled water. Thoroughly wipe or air dry the hose prior to sterilization.
3. Coil the hose loosely with the conductive stripe to the inside, and wrap the hose using standard wrapping procedure.
4. Follow the sterilizer manufacturer's operating instructions, allowing a minimum of three (3) hours exposure time. A minimum of seven (7) days aeration time should be provided following sterilization to reduce ethylene oxide residues to acceptable limits.

A catalog containing complete descriptions and ordering information for Berkeley™ VC Systems accessories and supplies is available from Cooper Medical Corp. Some supplies are presented here.

**VACURETTE®**

Semi-rigid vacuum aspiration curette with rounded tip, insertion depth marker, and tapered to fit Swivel Handle and Disposable Collection Set. (10 per package)

Order No.	Size
21655	8mm Straight
21413	9mm Straight
21414	10mm Straight
21415	11mm Straight
21416	12mm Straight
20317	8mm Curved
21552	9mm Curved
21553	10mm Curved
21554	11mm Curved
21555	12mm Curved

**VACURETTE® F TIP**

Flexible (Karmann cannula type) vacuum aspiration curette with rounded tip, dual ports, insertion depth marker, and tapered to fit Swivel Handle and Disposable Collection Set. (10 per package)

Order No.	Size
21663	4mm
21664	5mm
21665	6mm
21744	7mm
21745	8mm

**VACURETTE® F SET**

Flexible (Karmann cannula type) vacuum aspiration curette (identical to F Tip) complete with six feet (1.8 m) of vacuum tubing and tapered fitting.

Order No.	Size
23138	5mm
23135	6mm
23157	7mm
23158	8mm

**PERMEABLE GAUZE SACKS**

Gauze collection sack readily attaches to the collection bottle for simple and efficient separation of tissue from aspirated fluid. (10 per package)

Order No. 21163

**DISPOSABLE  
COLLECTION SET**

Rotating vacuum flow-control handle with a slip ring for fingertip control, six feet (1.8 m) of vacuum tubing, and tapered fitting. (10 per package)

Order No. 23116

**DISPOSA-FILTER ASSEMBLY**

Disposable Filter system designed to prevent aspiration material from reaching the pump and motor of the VC system. (10 per package)

Order No. 54298

**DISPOSA-TOPS**

Disposable or reusable plastic bottle tops for use with the Glass Collection Bottle (Order No. 54389). This Disposa-Top system is clean, comes ready to use with the Permeable Gauze Sack attached, and is simple to install and remove. Disposa-Tops are available in two styles: Non-Conductive (white) or Conductive (black) for specific use in explosive atmosphere. (10 per package)

Order No.	Style
54912	Non Conductive Disposa-Top
54913	Conductive Disposa-Top

**GLASS COLLECTION  
BOTTLE**

Glass collection bottle (1/2 gallon with graduations to 1400 cc) with a wide mouth for ease in cleaning and a translucent band to reduce the visibility of the aspirated material from the patient. Conductive or Non-Conductive Disposa-Tops must be used with this bottle.

Order No. 54389

**CONDUCTIVE HOSE,  
HANDLE, AND MALE  
FITTING ASSEMBLY**

Metal swivel handle (Order No. 23127), nine foot (2.7 m) conductive hose (Order No. 21387), and male fitting (Order No. 21218B). Designed for use with 8 to 12 mm Vacurettes and 4 to 8 mm Vacurette F Tips. Entire assembly is reusable.

Order No. 23039B

**CONDUCTIVE HOSE**

Reusable conductive hose, nine feet (2.7 m) long and 1/8 inch (9.5 mm) inner diameter.

Order No. 21387

**METAL SWIVEL HANDLE  
ASSEMBLY**

Metal swivel handle with slip ring for finger tip vacuum control. Designed for use with 8 to 12 mm Vacurettes and 4 to 8 mm Vacurette F Tips.

Order No. 23127

**SERIES CONNECTING  
HOSES**

Between collection bottles: 16 inch (40 cm) conductive hose.

Order No. 20119

Between second collection bottle and VC System: 20 inch (50 cm) conductive hose.

Order No. 20119A

**LAMICEL™ OSMOTIC  
CERVICAL DILATOR**

A sterile disposable tent made of polyvinyl alcohol surgical sponge, impregnated with magnesium sulfate (<400 mg). The tent is shaped to assume easy, safe insertion and passage into the endocervical canal to just beyond the internal os. (20 per box)

Order No.	Size
002202-501	3mm
002203-501	5mm