

GOMCO EXPLOSION PROOF SURGICAL SUCTION PUMP MODEL 3810



OPERATION, MAINTENANCE AND SERVICE MANUAL

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1.0 GENERAL INFORMATION

- 1.1 The Gomco Model 3810 provides regulated suction in the surgical environment requiring the use of explosion resistant equipment.
- 1.2 **Features:**
Supplied with Model 3810 as standard equipment are:
1. One (1) 2600 ml glass collection container with overflow protection cap assembly.
 2. Compact cart design with stainless steel top surface and 3" non-marking electrically conductive casters.
 3. One (1) tubing package. Includes a 26" and 6' piece of electrically conductive tubing.
 4. Accessory drawer built into cart for easy storage.

2.0 SPECIFICATIONS

- 2.1 **Vacuum Range:**
0 to 25 in Hg. (0 to 635 mm Hg.)
- 2.2 **Flow Rates:**
Open Flow 34 LPM
- 2.3 **Electrical Requirements:**
115 volts 60 Hz (3 amp max)
(220 volt also available)
- 2.4 **Motor Description:**
1/6th h.p. explosion-resistant (Class I, Group C areas), thermally protected, split phase.
- 2.5 **Pump Description:**
Diaphragm pump, belt driven.
- 2.6 **Dimensions:**
(d) 15½" x (w) 20" x (h) 32½"
- 2.7 **Weight:**
Shipping — 125 pounds
Net — 110 pounds

3.0 SET-UP:

- 3.1 **Plug Installation:**
All explosion resistant units shipped from Gomco are shipped less an explosion-resistant plug, because of the large number of different types available. A recognized explosion proof plug, matching the wall receptacles in your facility, must be installed onto the power cord of the pump. Follow the recommended installation instructions of the plug manufacturer to insure its explosion proof quality.
- 3.2 **Collection Bottle Assembly and Overflow Protection:**
The 2600 ml collection bottle is supplied with a cap and float assembly (see Illustration #2). When collected patient fluids exceed the 2600 ml line, the vacuum supply to the collection bottle is shut off by the float. *Note:* The float assembly will not shut off pump. The pump

must be turned off by the on/off switch when changing bottles to avoid overflow into the pump.

3.2.1. Set-Up:

1. Check the bottle top edge for nicks. If the bottle top is nicked, it will not seal.
2. Check that the cap gasket is properly positioned inside the cover.
3. Check that float moves freely.
4. Screw the cover assembly securely onto the bottle top, making sure that the gasket seals.
5. Place assembly on stand in bottle brackets.

3.2.2. Cleaning Instructions:

1. Unscrew the cover assembly and remove from the bottle.
2. Dispose of drainage fluids and materials in the bottle.
3. Soak the bottle and cover assembly in a warm detergent solution.
4. Unscrew the float assembly from the cover assembly. Make sure the small gasket on the float stem does not become disconnected while cleaning.
5. Wash all parts with a warm detergent solution and a nylon bristle brush, rinse thoroughly with water and aerate.
 - A . Autoclave at 250° F with autoclave timer set for 15 minutes. Follow autoclave manufacturer's directions for recommended procedure.
CAUTION: Do not flash autoclave the collection bottle.
 - B . If desired, sterilize with ethylene oxide gas. Follow manufacturer's directions for recommended procedure.
- 6 . Replace float assembly and screw cover assembly securely onto the bottle top.

3.3 Tubing Package:

The Model 3810 is supplied with one (1) single patient use conductive tubing package which includes one (1) length 26" and one (1) length 6'.

3.3.1 Set-Up:

1. Connect the 26" tube — one side to the vacuum connection on the top of the unit and the other side to the vertical fitting on cap and float assembly marked "To Pump".
2. Connect the 6' tube to the long bent metal tube of the cap assembly.

4.0 OPERATING PRINCIPLE

The negative and positive pressures of a diaphragm pump are developed by the reciprocating motion of the diaphragm inside the pump head. These pressures are maintained by the motion of the diaphragm and the pressure and suction flapper valves. On the up stroke, the pressure valve will open to allow air flow through to the exhaust or pressure port. On the down stroke, the pressure valve closes and the suction valve opens which draws a vacuum or creates a negative pressure at the suction side.

5.0 OPERATING PROCEDURE:

1. The on/off switch should be in the off position (down).
2. Be sure all tubing, including the length from bottle to pump is clean and thoroughly dry inside and out.
3. Be sure that the patient tube is connected to the side of the bottle top having the longer metal tube extending into bottle.

4. Check cotton packing in pump muffler for foreign matter. Replace if necessary, but caution should be used when repacking. Pack cotton loosely so that air can be freely expelled. Do this when pump is not running.
5. Be sure all overflow protection devices are in proper working order.
6. Plug the line cord into proper electrical outlet, making sure that it is the same as that indicated on the unit nameplate and that it is grounded.
7. Pull on/off switch to the on position.
8. Check degree of vacuum by pinching closed patient tube. The amount of vacuum in inches or mercury will register on the vacuum gauge. To increase vacuum, turn regulator knob clockwise. To decrease vacuum, turn knob counter clockwise.
9. Before using your pump on a patient, insure the vacuum by submerging the end of the patient tube in a container of water and notice the aspiration of water in the tube. The water should go up the tube toward the collection bottle.
10. Your pump is now ready for use.

6.0 MAINTENANCE AND SERVICE

6.1 To Remove Rear Panel:

Always disconnect power supply. Turn each of the six (6) screws fastening the rear panel to the cabinet counter-clockwise $\frac{1}{4}$ turn.

WARNING: The pump in this unit is belt driven. To prevent personal injury, keep hands away while pump is running.

WARNING: The motor is thermally protected and can automatically restart when the protector resets. Always disconnect power source before servicing.

6.2 Oiling the Motor:

The motor of this model has two (2) oil caps, one at each end. Add four (4) drops of Gomco Motor Oil in each tube twice yearly. Oiling should be limited to only twice yearly.

6.3 Drive Belt Replacement

1. Remove the push-pull cable from the motor switch lever.
2. Disconnect the vacuum tube from the pump.
3. Remove the motor and pump assembly from the cabinet by removing the five (5) hex nuts from the underside of the cabinet. Lift and remove the assembly from the cabinet.
4. Loosen the four (4) hex nuts fastening the motor to the motor mounting plate and slide the motor toward the pump to relieve the belt tension.
5. Replace the drive belt and slide the motor away from the pump until proper belt tension is felt (approximately $\frac{1}{2}$ " flex when moderate finger pressure is applied). Tighten the four (4) motor mounting bolts. **NOTE:** Excessive belt tension causes excessive motor and pump bearing wear.
6. Insert the motor and pump assembly into the cabinet and replace the five (5) hex nuts from the under side of the cabinet, making sure the ground strap is in place.
7. Reconnect the vacuum tube to the pump.
8. Insert the push-pull cable into the motor switch lever.

6.4 To Change Pump Air Filters

(See Illustration #6)

1. Remove the five (5) Phillips screws in the top cover of the unit. The filters and gasket are located beneath this top cover. Remove the filters and replace with new ones. The gasket may be cleaned with water, but should be replaced yearly with new air filters. Replace the filters in proper position

and replace the gasket. Note that the gasket and top cover will fit in one position only.

2. The air filters and gasket should be checked or replaced at a minimum of at least once a year.
3. To replace the inlet and outlet valves, remove the slotted machine screw that holds each valve in place. The stainless steel inlet and outlet valves are interchangeable. When replacing the outlet valve, place the new valve in location and note there is a retaining bar near the machine screw hole. This retaining bar holds the valve in position when replacing the inlet valve. Note that the valve holder is marked with an "X" in one corner. This "X" should be in the lower right hand corner toward the inlet of the air chamber. Replace the head and tighten the socket head screws to 90-100 inch pounds of torque. All of the above are contained in Parts Kit, No. 2295.

6.5 To Replace Pump Diaphragm

To replace the diaphragm, remove the four (4) socket cap screws from the head of the pump. The diaphragm is held in place by two (2) Phillips head screws. Remove screws, retainer plate, and the diaphragm. The diaphragm will fit in any position on the connecting rod. Replace the plate and the two Phillips head screws. Torque to 30 inch pounds.

CAUTION: Do not raise any burrs or nicks on the heads of these screws. These burrs could cause damage to the inlet valve.

Do not at any time attempt to remove the connecting rod or completely disassemble the pump. If it does not give you the proper service even after installing a new Service Kit, Part No. 2295, please return it to the factory for repair.

CAUTION: Do not at any time lubricate any of the parts with oil, grease, or petroleum products. The pump is permanently lubricated and requires no oiling or greasing.

GOMCO DESIGN		PART NO.	
REV.	DATE	REV.	DATE
1	10/15/54	1	10/15/54
2	11/15/54	2	11/15/54
3	12/15/54	3	12/15/54
4	1/15/55	4	1/15/55
5	2/15/55	5	2/15/55
6	3/15/55	6	3/15/55
7	4/15/55	7	4/15/55
8	5/15/55	8	5/15/55
9	6/15/55	9	6/15/55
10	7/15/55	10	7/15/55
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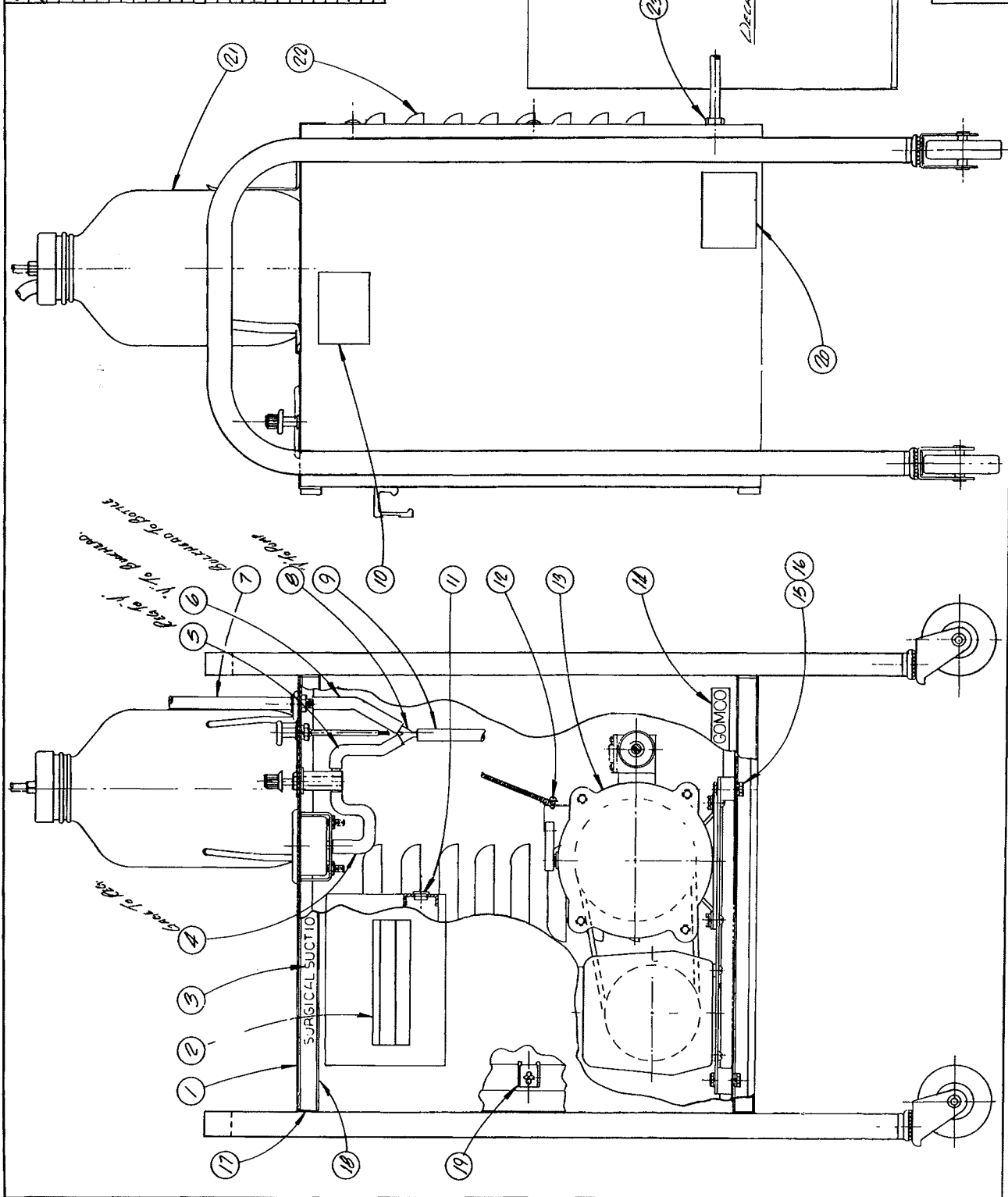


ILLUSTRATION NO. 1

DESIGN NO.	C-3513-A
CHECKED	784
ENGINEER	APPR.
COMPANY	GOMCO SURGICAL MFG. CORP.
SCALE	AS SHOWN
FILE NO.	3513-A
DATE	EX. PROOF
NAME	MOTOR ASSY.
DESCRIPTION	BILL OF MATERIALS
QTY.	1
DESCRIPTION	EXP. PROOF MOTOR 1/4 HP.
QTY.	1
DESCRIPTION	#6-32 x 3/8 Lg.
QTY.	1
DESCRIPTION	#6 COLL. WASHER
QTY.	1
DESCRIPTION	#6-32 HEX. NUT
QTY.	1
DESCRIPTION	CRABLE CLAMP
QTY.	3023
DESCRIPTION	SWITCH LEVER ASSY.
QTY.	3022-5A
DESCRIPTION	POWER CORD ASSY.
QTY.	3178-5A
DESCRIPTION	SPRICE BOX ASSY.
QTY.	3179-5A
DESCRIPTION	PIS TAIL TERMINAL
QTY.	P.2539-9
DESCRIPTION	PULLEY 5/8X1 1/2
QTY.	P.3511

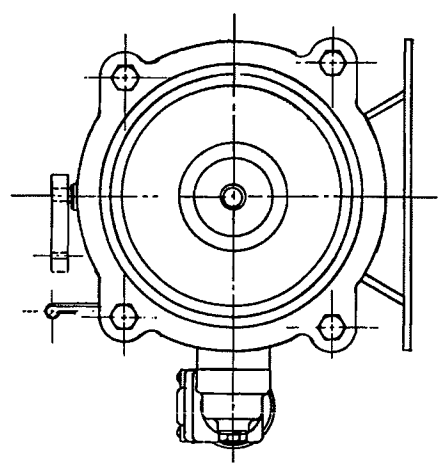
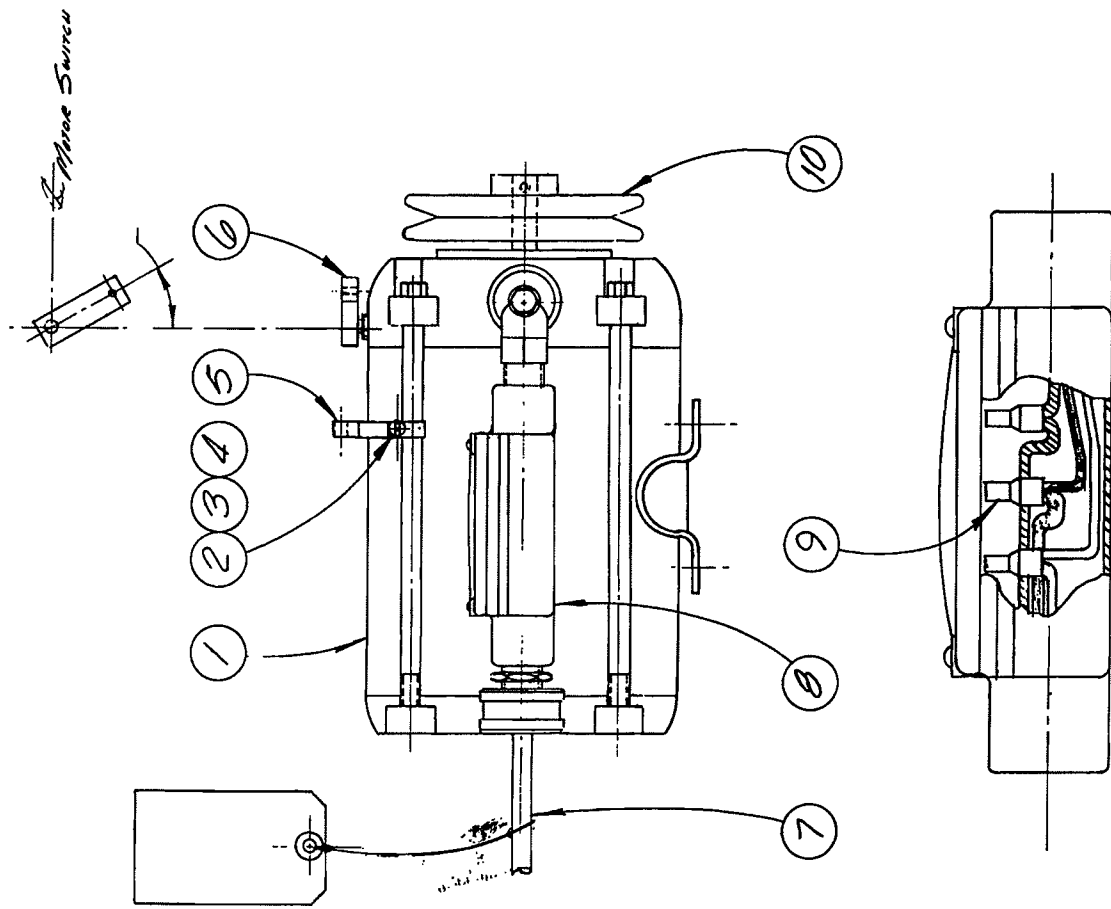
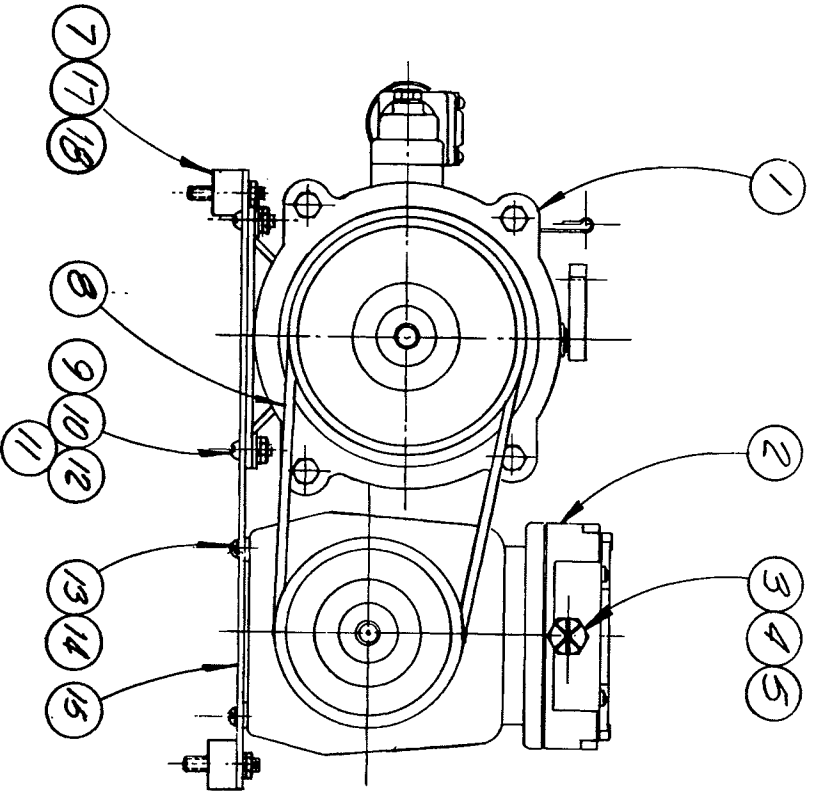
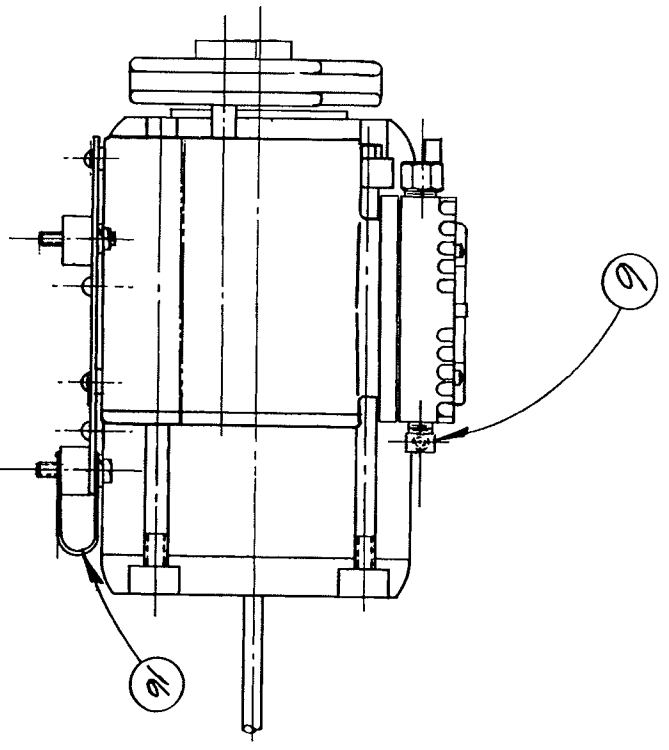


ILLUSTRATION NO. 3

WIRING DETAIL - FULL SIZE

REVISIONS

DATE	1-28-54	CHECKED	EDMUND SURGICAL MFG. CORP.	DWG. NO.	3514-A
BY	W. J. ...	SHOWN APPR.		PART NO.	3514-A
FOR		APPROVED		TRACED TO	EX. Room
FILE					
THIS DRAWING IS THE PROPERTY OF EDMUND SURGICAL MFG. CORP. IT IS TO BE KEPT IN THE OFFICE OF THE ENGINEER OR DESIGNER OR IN THE OFFICE OF THE PURCHASER OR IN THE OFFICE OF THE MANUFACTURER. IT IS TO BE RETURNED TO THE ENGINEER OR DESIGNER OR TO THE PURCHASER OR TO THE MANUFACTURER UPON THE COMPLETION OF THE WORK FOR WHICH IT WAS PREPARED.					
QTY.	1	DESCRIPTION	Part No.		
1	1	MOTOR ASSEMBLY	3513-A		
2	1	DIA. PUMP SPR. DRIVE	P. 3512		
3	1	MUFFLER	3060		
4	1	MUFFLER END CAP	P. 3136		
5	1	CONTROL DACTYLINS	P. 2469		
6	1	BRASS ELBOW 1/2" DIA.	P. 3562		
7	5	MOTOR NUTS 27"	P. 3510		
8	1	1/2" DIA. 3/8" DIA.	EX. H. M. S.		
9	1	3/8" DIA. 1/2" DIA. WASHER			
10	1	1/2" DIA. 1/2" DIA. WASHER			
11	1	1/2" DIA. LOCKWASHER			
12	1	1/2" DIA. LOCKWASHER			
13	1	1/2" DIA. LOCKWASHER			
14	1	MOTOR MTS. PLATE	P. 3045		
15	1	SPRING STRAP	3160		
16	5	3/16" DIA. LOCKWASHER			
17	5	3/16" DIA. LOCKWASHER			
18	5	3/16" DIA. LOCKWASHER			



REVISIONS

ILLUSTRATION NO. 4

PARTS		QUANTITY		DESCRIPTION	
QTY	NO	QTY	NO	DESCRIPTION	REMARKS
1	1	1	1	WHEEL	
2	1	1	1	AXLE	
3	1	1	1	BRACKET	
4	1	1	1	SCREW	
5	1	1	1	WASHER	
6	1	1	1	SPACER	
7	1	1	1	SCREW	
8	1	1	1	WASHER	
9	1	1	1	BRACKET	
10	1	1	1	AXLE	
11	1	1	1	WHEEL	
12	1	1	1	AXLE	
13	1	1	1	BRACKET	
14	1	1	1	SCREW	
15	1	1	1	WASHER	
16	1	1	1	SPACER	
17	1	1	1	SCREW	
18	1	1	1	WASHER	
19	1	1	1	BRACKET	
20	1	1	1	AXLE	
21	1	1	1	WHEEL	
22	1	1	1	AXLE	
23	1	1	1	BRACKET	
24	1	1	1	SCREW	
25	1	1	1	WASHER	
26	1	1	1	SPACER	
27	1	1	1	SCREW	
28	1	1	1	WASHER	
29	1	1	1	BRACKET	
30	1	1	1	AXLE	
31	1	1	1	WHEEL	
32	1	1	1	AXLE	
33	1	1	1	BRACKET	
34	1	1	1	SCREW	
35	1	1	1	WASHER	
36	1	1	1	SPACER	
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39	1	1	1	BRACKET	
40	1	1	1	AXLE	
41	1	1	1	WHEEL	
42	1	1	1	AXLE	
43	1	1	1	BRACKET	
44	1	1	1	SCREW	
45	1	1	1	WASHER	
46	1	1	1	SPACER	
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65	1	1	1	WASHER	
66	1	1	1	SPACER	
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95	1	1	1	WASHER	
96	1	1	1	SPACER	
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99	1	1	1	BRACKET	
100	1	1	1	AXLE	

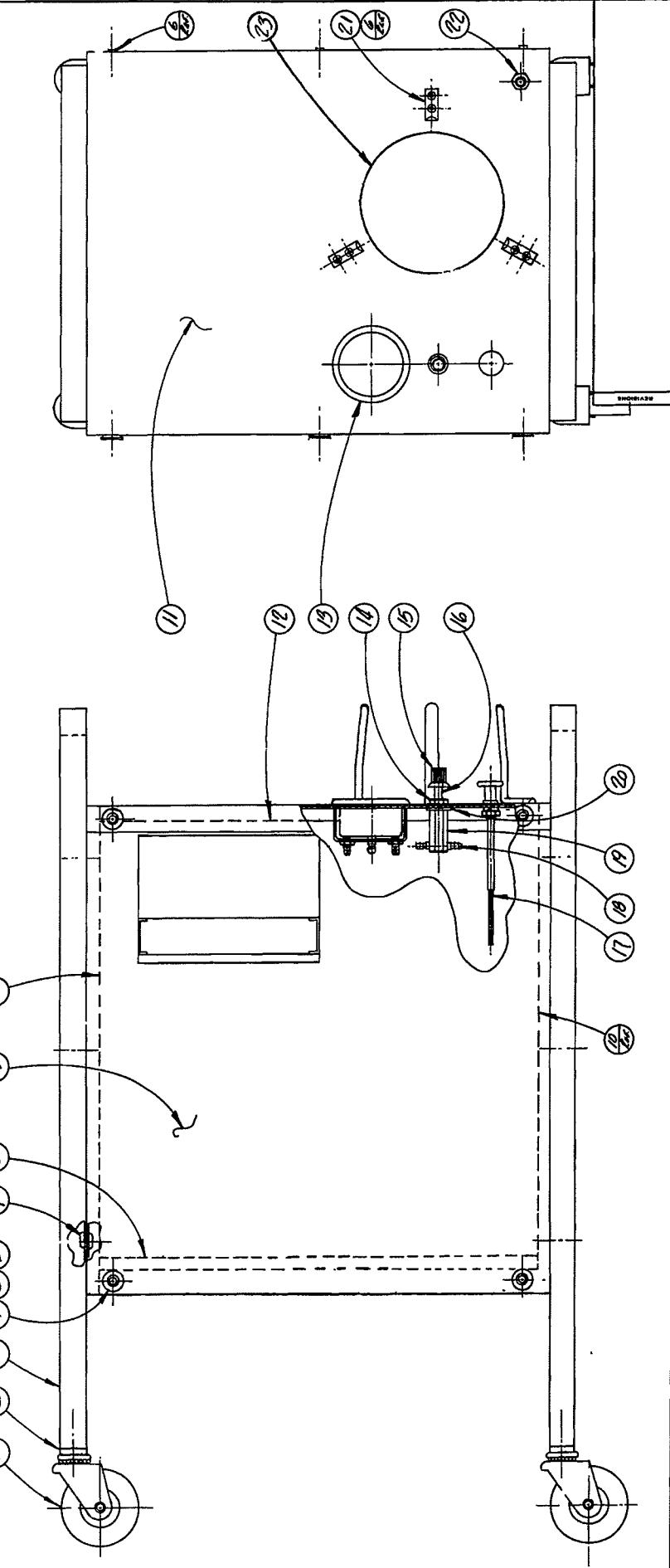
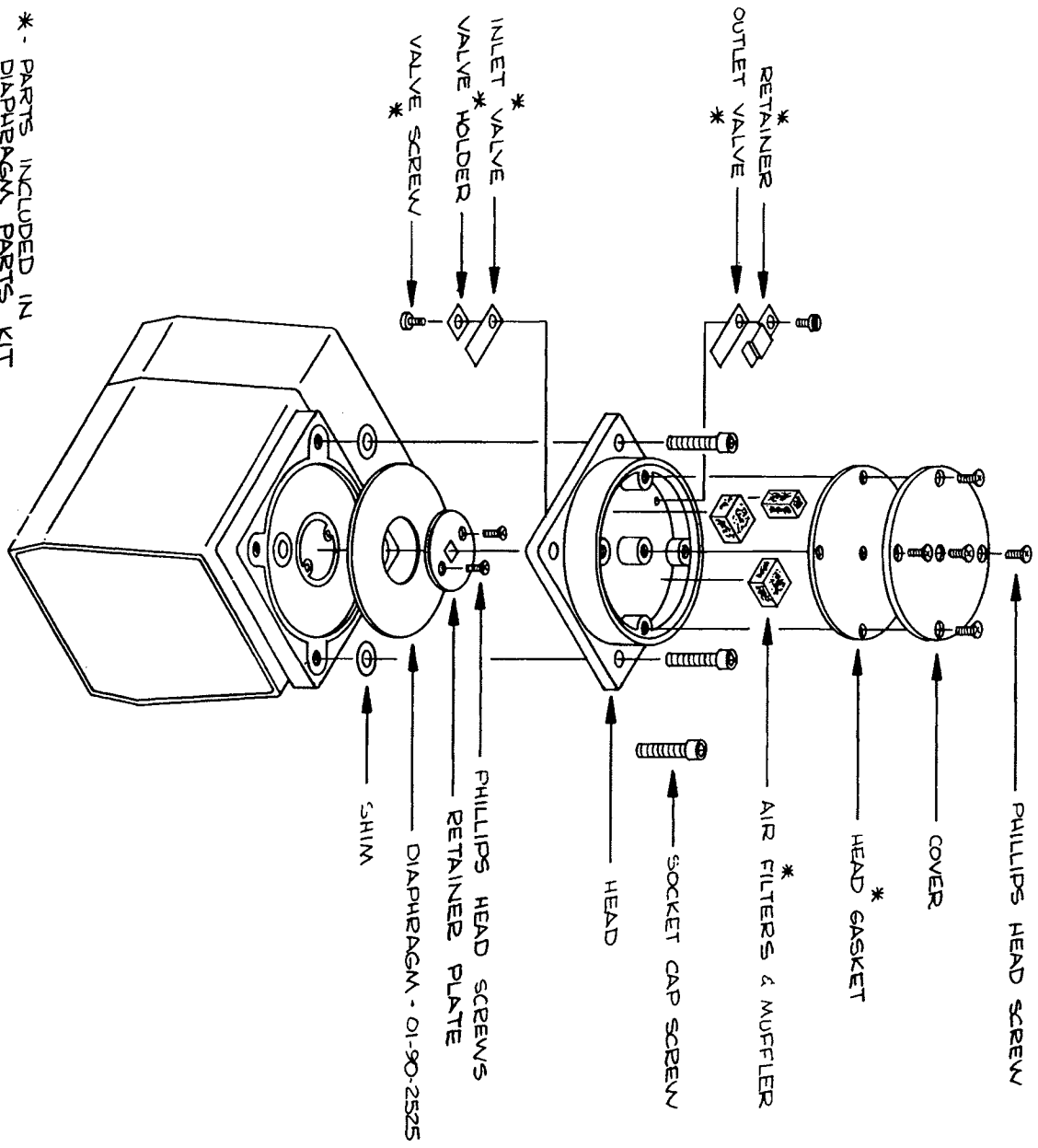


ILLUSTRATION NO. 5



* - PARTS INCLUDED IN DIAPHRAGM PARTS KIT NO. 01-90-2295.

DIAPHRAGM PUMP

DRAWING NO.	CHECKED	DATE	BY	DESIGNED	DATE	BY	APPROVED	DATE	BY
GUMCO SURGICAL MFG. CORP.									
<small>FOR THE PURPOSES OF THE PATENT OFFICE, THIS DRAWING IS HEREBY DECLARED TO BE THE PROPERTY OF GUMCO SURGICAL MFG. CORP. AND IS TO BE KEPT IN CONFIDENCE. IT IS TO BE USED ONLY FOR THE PURPOSES OF THE PATENT OFFICE AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM.</small>									
SCALE	1" = 1"	PROJ. NO.	100-1000	REV.	1	DATE	10-1-58	BY	J. L. H.
FILE NO.	100-1000	REV.	1	DATE	10-1-58	BY	J. L. H.	PART NO.	100-1000
									TABLE TOP

REVISIONS
ILLUSTRATION NO. 6

8.0 TROUBLE SHOOTING

PROBLEM	PROBABLE CAUSES	REMEDY
MOTOR WILL NOT RUN WHEN SWITCH IS PULLED UP	1. SWITCH CABLE NOT ADJUSTED PROPERLY	ADJUST CABLE
	2. BAD POWER SOURCE	CHECK POWER OUTLET
	3. MOTOR BAD	REPLACE MOTOR
MOTOR RUNS BUT NO SUCTION	1. DRIVE BELT BROKEN OR SLIPPING	REPLACE BELT OR TIGHTEN
	2. VACUUM LINES DISCONNECTED OR LEAKING	CHECK ALL TUBING
LOW SUCTION	1. LOOSE TUBING CONNECTION	CHECK TUBING
	2. COLLECTION BOTTLE TOP LEAKING	CHECK SET-UP

9.0

REPLACEMENT PARTS LIST MODEL 3810

		Ill. No.
01-90-3521	Cabinet Assembly	
Stainless Steel Top	01-90-3000	5
Leg	01-90-3002	5
Caster Socket	01-90-3411	5
Electrically Conductive Caster	01-90-3470	5
Bottle Bracket	01-90-2697	5
Push-Pull Cable	01-90-3416	5
Bulkhead Fitting	01-90-3530	5
Vacuum Regulator Body	01-90-2431	5
Plastic Tee (1/8 NPT)	01-90-2445	5
Vacuum Regulator Needle	01-90-2429	5
Vacuum Regulator Jamb Nut	01-90-2859	5
Vacuum Regulator Knob	01-90-2351	5
Vacuum Gauge	01-90-2578	5
Cabinet Body with Drawer	01-90-2994	5
01-90-3513	Motor Assembly	3
	(115 v 60 Hz)	
Switch Lever	01-90-3422	3
Push-Pull Cable Clamp	01-90-3423	3
Pulley	01-90-3511	3
01-90-3531	Motor Assembly	
	(115 v 50 Hz)	
Switch Lever	01-90-3422	
Push-Pull Cable Clamp	01-90-3423	
Pulley	01-90-3511	

01-90-3532	Motor Assembly (230 v 60 Hz)	
Switch Lever	01-90-3422	
Push-Pull Cable Clamp	01-90-3423	
Pulley	01-90-3511	
01-90-3533	Motor Assembly (230 V 50 Hz)	
Switch Lever	01-90-3422	
Push-Pull Cable Clamp	01-90-3423	
Pulley	01-90-3511	
01-90-3409	Drawer Assembly	1
Drawer Only	01-90-2998	
Drawer Pull	01-90-3408	
01-90-3407	Rear Panel Assembly	1
Rear Panel	01-90-3001	
¼ Turn Fastener	01-90-3405	
Fastener Retainer	01-90-3406	
Cord Clip	01-90-3473	
01-90-3445	Motor Mounting Plate	4
01-90-3512	Pump with Pulley	4
01-90-3060	Muffler	4
01-90-3136	Muffler End Cap	4
01-90-2469	Brass Elbow (¼ NPT)	4
01-90-3562	Motor Mount	4
01-90-3510	Vee Belt	4
01-90-2514	Plastic "Y"	1
01-90-3412	Cabinet Trim Strip	1
01-90-3413	Trim Strip End Cap	1
01-90-3418	Clip-On Receptacle	1
01-90-3560	Ele. Cond. Tube Pkg.	1
01-90-2295	Pump Repair Kit	6
01-90-2525	Pump Diaphragm	6
01-90-2771	Collection Bottle Assembly	2
2600 ml Collection Bottle	01-90-3105	2
Cap and Float Assembly	01-90-2394	2
01-90-2768	Cap & Float Assembly	2
Cap (includes Gasket)	01-90-2393	2
Float Gasket	01-90-2395	2
Float Assembly	01-90-2878	2

**Allied Healthcare
Products, Inc.**

GOMCO Division

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St. Louis, MO 63110
Telephone (314) 771-2400
Toll Free (800) 444-3954

INSTRUMENTS OF CARE

PART NO. S168-211-001