

**GOMCO®  
EXPLOSION PROOF  
SURGICAL SUCTION PUMP  
MODEL 3840**

**OPERATION, MAINTENANCE  
AND SERVICE MANUAL**



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## **1.0 PRECAUTIONS:**

### **1.1 WARNINGS:**

Warnings are provided to alert the user to situations that may cause personnel injury.

### **1.2 CAUTIONS:**

Cautions are provided to alert the user to situations that may cause equipment damage.

## **2.0 GENERAL INFORMATION:**

**2.1** The Gomco Model 3840 provides regulated suction in the surgical environment requiring the use of explosion resistant equipment. The double collection containers with switching valve allows the user to change the bottles without interrupting surgery.

### **2.2 Features:**

Supplied with Model 3840 as standard equipment are:

1. Two 2800 ml collection containers with overflow protection cap assemblies.
2. Flow control valve to switch vacuum from the left bottle to the right bottle.
3. Compact cart design with stainless steel top surface and 3 in. non-marking electrically conductive casters.
4. Two tubing packages. Each including a 26 in. & a 6 ft. piece of electrically conductive tubing.
5. Accessory drawer built into cart for easy storage.

## **3.0 SPECIFICATIONS:**

**3.1 Vacuum Range:**  
0 to 25 in. Hg. (0 to 635 mm Hg.)

**3.2 Flow Rates:**  
Open flow 34 LPM

**3.3 Electrical Requirements:**  
115 Volts 60 Hertz (3.8 Amp maximum) (230 Volt also available)

**3.4 Motor Description:**  
1/6th H.P. explosion-resistant (Class 1, Group C areas), thermally protected, split phase.

**3.5 Pump Description:**  
Diaphragm pump, belt driven

**3.6 Dimensions:**  
152 in. (D) X 20 in. (W) X 322 in. (H) (39.4 cm (D) X 50.8 cm (W) X 82.5 cm (H))

<b>3.7 Weight:</b>		
Shipping	-	135 Pounds (61.2 kilograms)
Net	-	110 Pounds (49.9 kilograms)

#### 4.0 SET-UP:

##### 4.1 Plug Installation:

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**WARNING: Only qualified service personnel should install the explosion resistant plug.**

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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.

##### 4.2 Collection Bottle Assembly:

Each 2800 ml collection bottle is supplied with a cap and float assembly (see Illustration No. 2). When collected fluids exceed the 2800 ml line, the vacuum supply to the collection bottle is shut off by the float.

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**CAUTION: The float assembly will not shut the pump off. To prevent overflow into the pump, either turn the flow control valve to direct the vacuum to the empty bottle, or turn the pump off**

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##### 4.2.1 Set-up:

1. Check the bottle top edges 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 the float moves freely.
4. Screw the cover assembly securely onto the bottle top, making sure that the gasket seals.
5. Place the assembly on the stand in the bottle brackets.
6. Repeat the above steps for the second bottle.

#### 4.2.2 Cleaning Instructions:

1. Remove bottle caps.
2. Dispose of drainage fluids and materials in the bottle.
3. Soak the bottle and top assemblies 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 nylon bristle brush, rinse thoroughly with water and aerate.
  - a. Autoclave at 250°F for 15 minutes. Follow autoclave manufacturer's directions for recommended procedure.

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**CAUTION: Do not flash autoclave the collection bottle.**

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- 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.

#### 4.3 Tubing Package:

The Model 3840 is supplied with two single patient use conductive tubing packages. Each includes one length 26 in. and one length 6 ft.

##### 4.3.1 Set-up:

1. Connect the 26 in. tube - one end to the cabinet vacuum connection and the other end to the vertical fitting on the cap and float assembly marked "To Pump."
2. Connect the 6 ft. tube to the long bent metal tube on the cap assembly.

#### 5.0 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.

## 6.0 OPERATING PROCEDURE:

1. The ON-OFF switch should be in the OFF position.
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 the bottle.
4. Be sure all overflow protection devices are in proper working order.
5. Plug the line cord into the proper electrical outlet, making sure that it is the same as that indicated on the unit name plate and that it is grounded.
6. Rotate the ON-OFF switch to the ON position.
7. Check the degree of vacuum by pinching closed the patient tube. The amount of vacuum in Hg will register on the vacuum gauge. To increase the vacuum, turn the regulator knob clockwise. To decrease vacuum, turn the knob counterclockwise.
8. Select the left or right collection bottle by turning the "Flow Control Valve" lever to the positions indicated on the cabinet top instruction decal.
9. Your pump is ready for use.

## 7.0 MAINTENANCE AND SERVICE:

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**WARNING:** Electric shock hazard. Do not remove cover. Refer servicing to qualified service personnel.

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### 7.1 To Remove Rear Panel:

Always disconnect power supply. Turn each of the six (6) screws fastening the rear panel to the cabinet counterclockwise 1/4 turn.

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

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

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### 7.2 Oiling The Motor:

The motor of this model is permanently lubricated and requires no oiling or greasing.

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**CAUTION:** Do not, at any time, lubricate the motor with oil, grease or petroleum products.

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### 7.3 Drive Belt Replacement:

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**WARNING: Electric shock hazard. Do not remove cover. Refer servicing to qualified service personnel.**

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1. Rotate ON-OFF switch to the OFF position.
2. Unplug power cord from outlet.
3. Remove back cover from cabinet.
4. Disconnect ON-OFF switch from top of cabinet (See Illustration No. 1).
5. Disconnect the vacuum tube from the pump.
6. Remove the motor and pump assembly from the cabinet by removing the four (4) hex nuts from the underside of the cabinet. Lift and remove the assembly from the cabinet.
7. 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.
8. Replace the drive belt and slide the motor away from the pump until proper belt tension is felt (approximately 1/2 in. flex when moderate finger pressure is applied). Tighten the four (4) motor mounting bolts.

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**CAUTION: Excessive belt tension causes excessive motor and pump bearing wear.**

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9. Insert the motor and pump assembly into the cabinet and replace the four (4) hex nuts from the underside of the cabinet, making sure the ground strap is in place.
10. Reconnect the vacuum tube to the pump.
11. Insert ON-OFF switch back into top of cabinet.
12. Replace back cover onto cabinet.

### 7.4 To Change Pump Air Filters (See Illustration # 6):

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**WARNING: Electric shock hazard. Do not remove cover. Refer servicing to qualified service personnel.**

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1. Remove the five (5) Phillips head screws in the top cover of the pump. The filters and gasket are located beneath this top cover. Remove the filters and replace them with new ones. The gasket may be cleaned with water, but it should be replaced yearly with new air filters. Replace the filters in proper position only the air filters and gasket should be checked or replaced at a minimum of at least once a year. 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 Part Kit, Catalog No. 01-90-2295.

#### 7.5 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.

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

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**CAUTION:** Do not, at any time, attempt to remove the connecting rod or completely disassemble the pump. If the pump does not give you the proper service, even after installing a new Service Kit, Part Number 01-90-2295, please return the pump to the factory for repair.

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**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.

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#### 8.0 ILLUSTRATIONS:

- 1.0 FINAL ASSEMBLY
- 2.0 BOTTLE ASSEMBLY
- 3.0 MOTOR ASSEMBLY
- 4.0 MOTOR AND PUMP ASSEMBLY
- 5.0 CABINET ASSEMBLY
- 6.0 PUMP REPAIR KIT

REVISIONS	
REV. NO.	DESCRIPTION
1	INITIAL DESIGN
2	REVISED TO SHOW
3	REVISED TO SHOW

REF. NO.	QTY	DESCRIPTION	PART NO.
1	1	CABINET ASSEMBLY	001-90-3515
3	5.75	1/4"TYZ CONDUCTIVE TUBING	
4	1	DRAINER ASSEMBLY	
5	2	HOLE PUGS	
6	6	CUP ON RECEPTACLE	01-90-3418
7	1	3840 SURG. SUCTION DECAL	
8	2	2800 ml COLLECTION BOTTLE	01-90-2771
11	4.5	3/16 X 5/16 COND. TUBING	
12	1	PLASTIC Y	
13	1	OPERATION DECAL	01-90-2774
14	1		
15	1		
16	1	PUMP ASSEMBLY	01-90-3514
17	1	NOBEXITE	
18	1	CONICO DECAL	
19	4	5/16 WED. LOCK WASHER	
20	4	5/16-18 HEX NUT	
21	1	REAR PANEL ASSEMBLY	01-90-3507
22	1	WARNING DECAL	
23	1	HISCO STRAIN RELIEF	
24	1	WARNING DECAL	
27	1	INSTRUCTION DECAL REGULATOR	
28	1	FLOW VALVE DECAL	
29	2	CONV. TUBING PKG	01-90-3580
30	1	WASHER #10 EXT TOOTH	

NOTES

- TO ATTACH POWER SWITCH TO ENCLOSURE:
  - UNSCREW SWITCH RETAINER NUT ON SWITCH.
  - PULL SWITCH KNOB AND LABEL OFF OF SWITCH.
  - PLACE KNOB AND SWITCH LABEL WITH KEY GOING INTO KEY SLOT OF STAINLESS STEEL TOP.
  - ALIGN SWITCH TO KNOB AND PUSH ONTO KNOB.
  - TIGHTEN SWITCH RETAINER NUT FINGER TIGHT. DO NOT OVER TIGHTEN AS THE PLASTIC THREADS MAYBE DAMAGED.
- ITEM #10 STAR WASHER IS USED BETWEEN GROUND WIRE OF PUMP ASSEMBLY AND CABINET. ITEM #10 AND 30 NOT SHOWN.

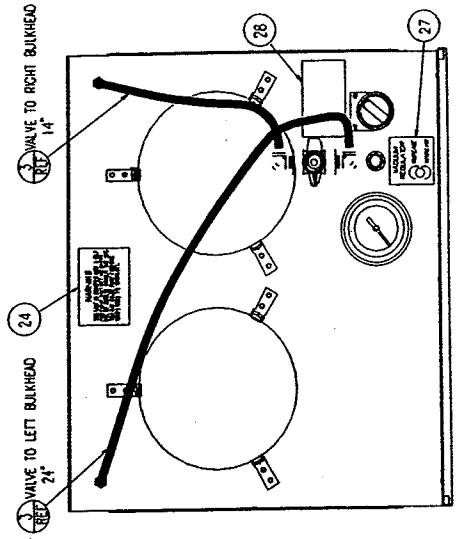
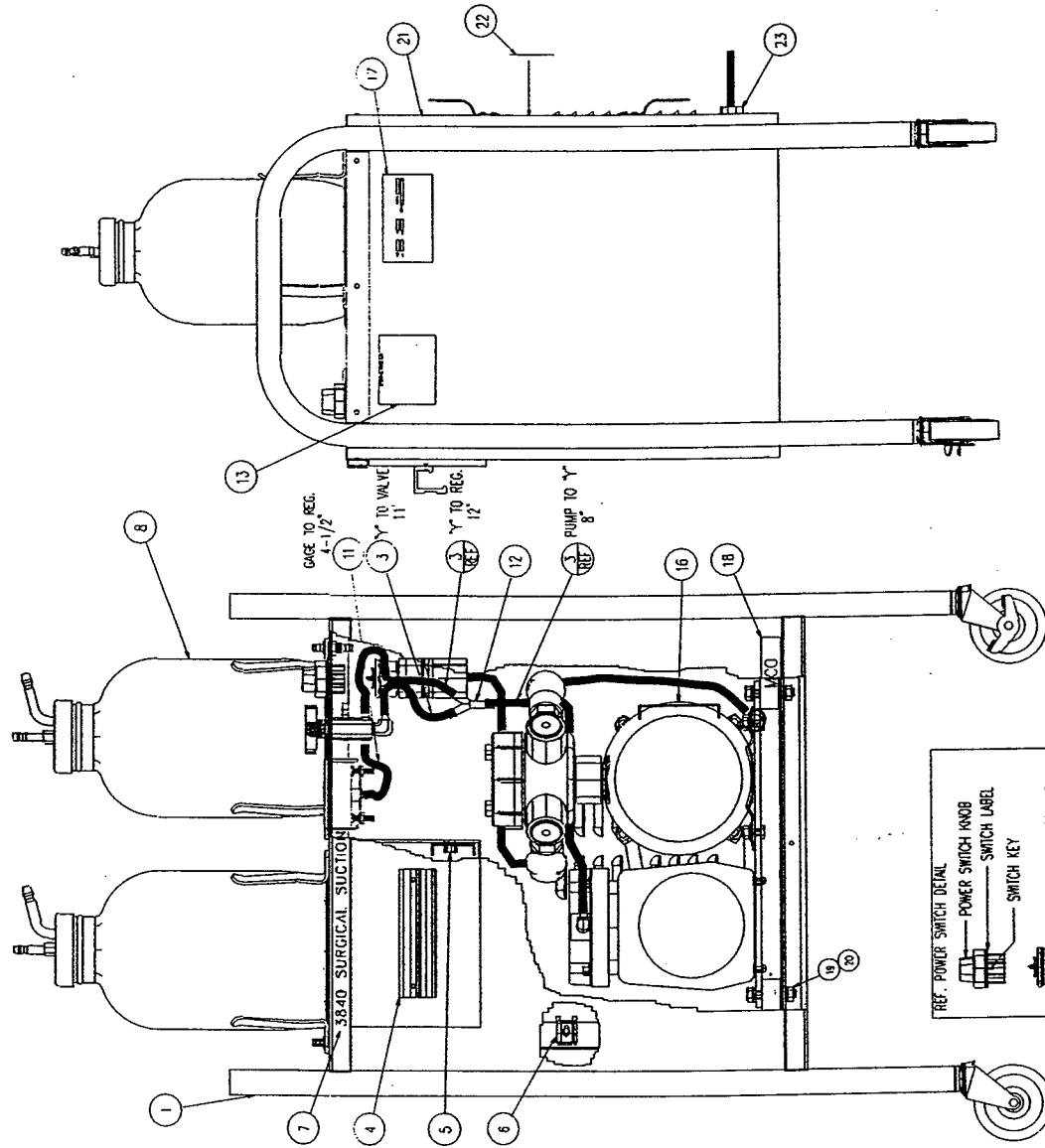
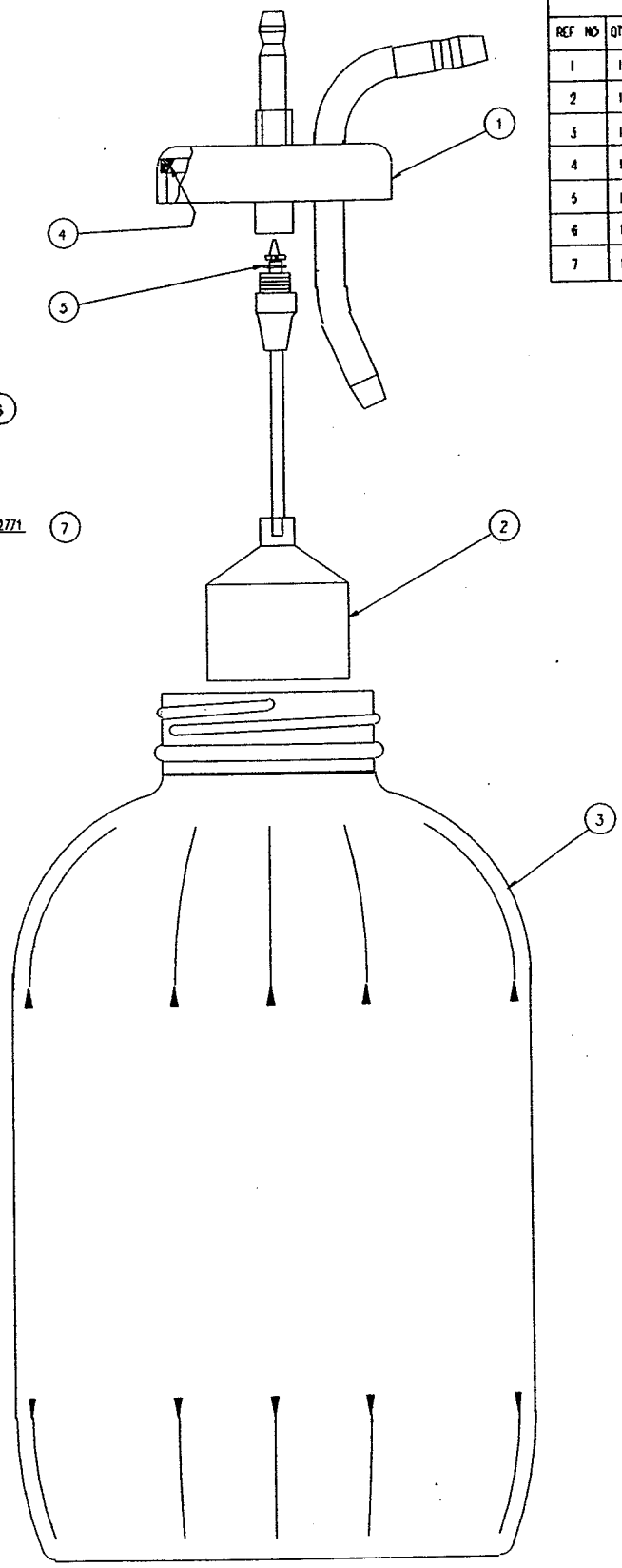


ILLUSTRATION NO. 1

REV	ECO. NUMBER	DATE	BY

BILL OF MATERIAL			
REF NO	QTY	DESCRIPTION	PART NO
1	1	CAP ASSY.	D1-90-2393
2	1	FLOAT ASSY.	D1-90-2878
3	1	GALLON BOTTLE	D1-90-3105
4	1	CAP GASKET	D1-90-2394
5	1	FLOAT GASKET	D1-90-2395
6	1	CAP & FLOAT ASSY	D1-90-2768
7	1	GALLON BTL. & CAP ASSY	D1-90-2771



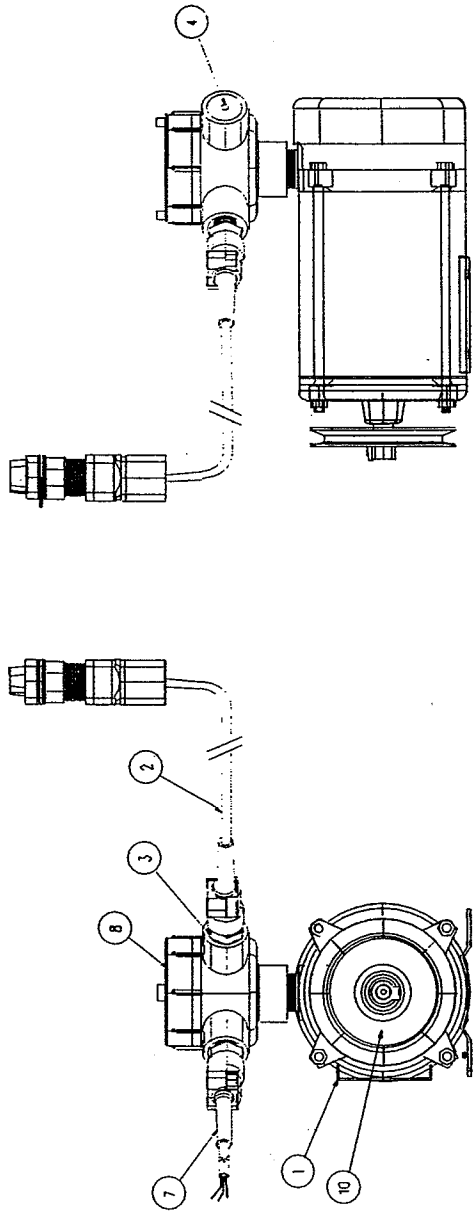
CAP & FLOAT ASSY - D1-90-2768 (6)  
 INCLUDES CAP - D1-90-2393  
 FLOAT ASSY - D1-90-2878

GAL. BOTTLE & CAP COMPLETE - D1-90-2771 (7)  
 INCLUDES CAP - D1-90-2393  
 FLOAT ASSY - D1-90-2878  
 GAL. BOTTLE - D1-90-3105

ILLUSTRATION NO. 2

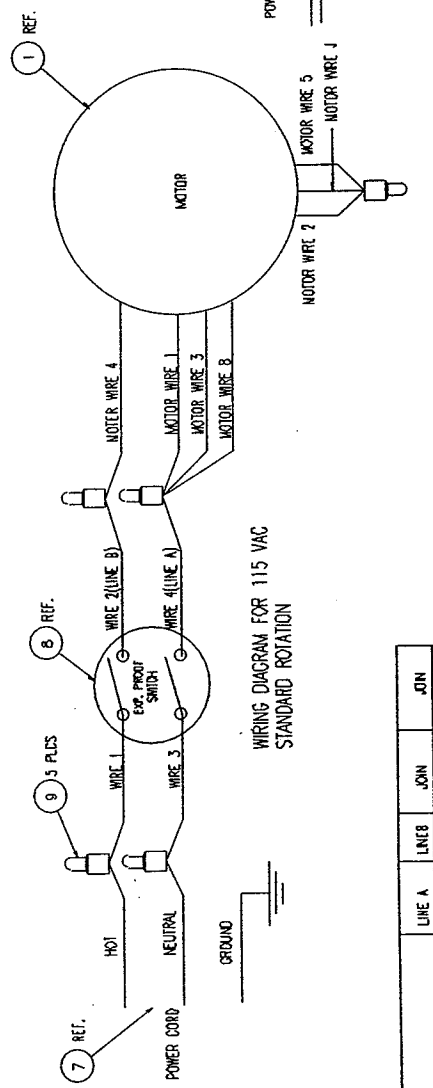
REVISIONS	
REV. NO.	DESCRIPTION

BILL OF MATERIAL			
ITEM	CATALOG NUMBER	DESCRIPTION	QTY
	50Hz		
1	01-90-5557	MOTOR 1/6 HP EXP. PROOF	1
2	01-90-5548	SWITCH ASSY, EXP. PROOF	1
3		FILING, MULT. (INDUCT. 1 TO 1/1)	2
4		FILING, PLUG, 1" EXP. PROOF	2
7	01-90-3178	POWER CORD ASSY	1
8		SPLICE BOX, EXP. PROOF	1
9		PG FAIL TERMINAL	5
10	01-90-3511	PULLEY 5 INCH	1



NOTES:

1. WIRING CONNECTIONS BETWEEN SWITCH AND POWER CORD ARE SAME FOR ALL VERSIONS.
2. WIRING CONNECTIONS FOR GROUNDING ARE SAME FOR ALL VERSIONS.
3. GROUND WIRE COLOR IS EITHER GREEN OR GREEN/YELLOW
4. HOT WIRE IS EITHER BLACK OR BROWN
5. NEUTRAL WIRE IS EITHER WHITE OR BLUE

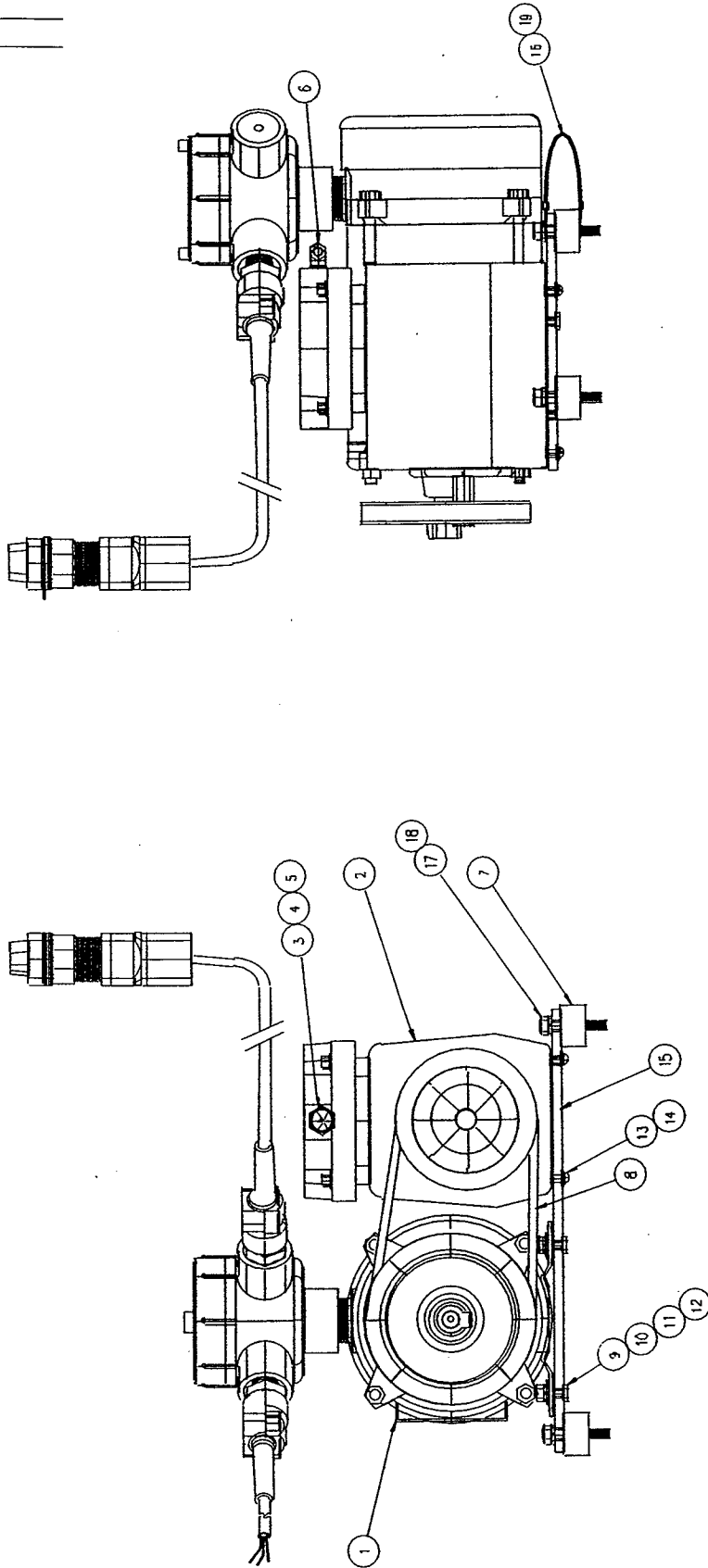


WIRING DIAGRAM FOR 115 VAC  
STANDARD ROTATION

	LINE A	LINE B	JOIN	JOIN
230 VAC (STD ROTATION)	1	4	2, 3, 8	4, 5
230 VAC (OPP ROTATION)	1	4	2, 3, 5	4, 8
115 VAC (STD ROTATION)	1, 3, 8	4		2, 4, 5
115 VAC (OPP ROTATION)	1, 3, 5	4		2, 4, 8

ILLUSTRATION NO. 3

REVISIONS		
REV	NO	DATE



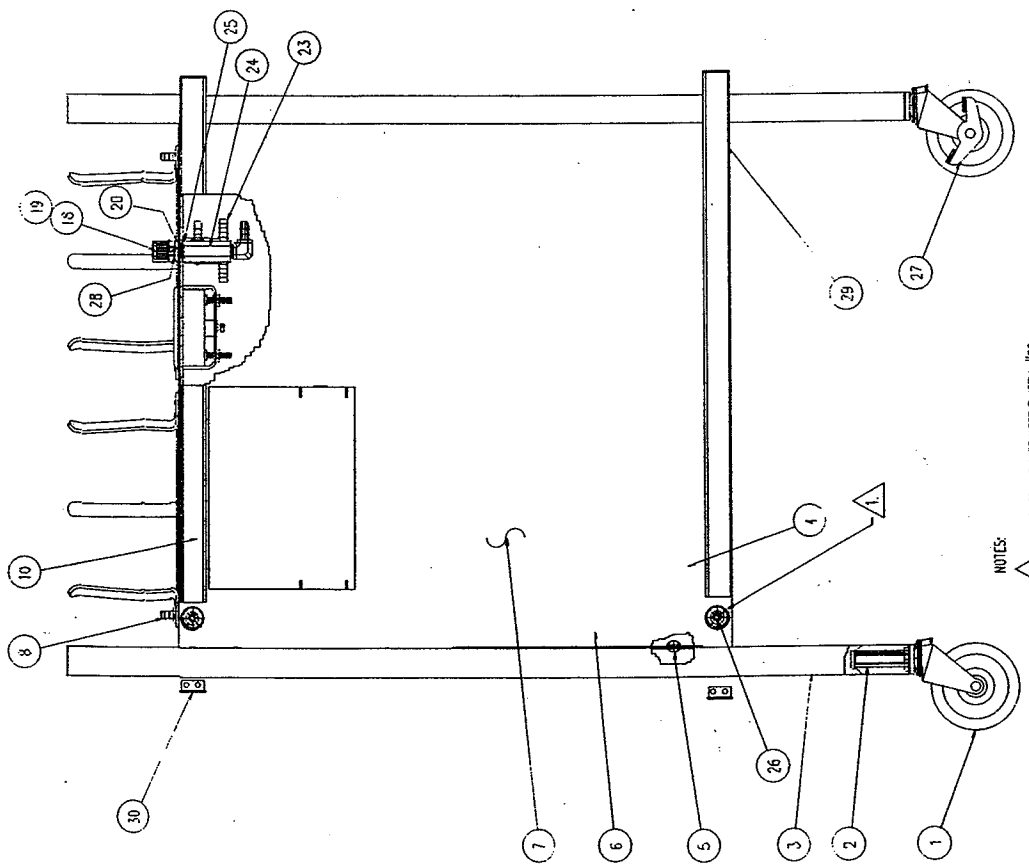
BILL OF MATERIAL							
REF. NO	QTY	DESCRIPTION	PART NO.	REF. NO	QTY	DESCRIPTION	PART NO.
1	1	MOTOR ASSY	01-90-3515	15	1	MOTOR MTC. PLATE	01-90-3445
2	1	DN. RAMP	01-90-3512	16	1	GROUND STRAP	01-90-3160
3	1	MUFFLER	01-90-3080	17	3	5/16 I D LOCKWASHER	
4	1	MAFFER END CAP	01-90-3156	18	4	5/16-18 HEX NUT	
5	1	FELT DEC.	3710-C				
6	1	BRASS ELBOW 1/4 INPT	01-90-2469				
7	1	MOTOR MOUNT	01-90-3562				
8	1	VEE BELT 25"	01-90-5550				
9	4	1/4-20 X 5/8 LG.					
10	4	5/16 X 3/4 X 1/16 FLAT WASHER					
11	4	1/4-20 HEX NUT					
12	4	1/4 I.D. LOCKWASHER					
13	4	10-32 X 1/16 LG PAN HD NS					
14	4	10 LOCKWASHER					

ILLUSTRATION NO. 4

REV	DATE	BY
1	7-11-59	MM
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REF. NO.	QTY	DESCRIPTION	PART NO.
1	1	3" EXPANDED METAL CASTER	01-90-3923
2	2	CABINET LEG	01-90-3411
3	2	CABINET LEG	01-90-1002
4	1	FOAM (BOTTOM)	01-90-3501
5	12	POP 'T' RING	
6	1	FOAM (SIDE)	01-90-3489
7	1	CABINET BODY	01-90-2954
8	2	BULKHEAD FITTING	01-90-2666
9	2	2800 ml BOTTLE PAD	01-90-2001
10	1	FOAM (CAB. TOP)	
11	1	STAINLESS STEEL TOP	01-90-3404
12	6	BOTTLE BRACKET	01-90-2697
13	21	POP RING (PLATED)	
14	1	GAUGE, VACUUM 2-1/2"	01-90-2578
18	1	REGULATOR NEEDLE	01-90-2429
19	1	REGULATOR KNOB	01-90-2357
20	1	JAMB NUT	01-90-2058
22	1	FLOW CONTROL VALVE	01-90-3516
23	1	1/8" NPT PLASTIC 'T' FITTING	01-90-2445
24	1	VACUUM REGULATOR BODY	01-90-2431
25	1	WASHER 7/16 ALT TMS1	
26	6	POP RING (LARGE HEAD)	
27	2	3" COND. CASTLER W/BRACK	01-90-3924
28	1	REGULATOR SPRING	01-90-3644
29	2	CABINET TRIM STRIP	01-90-3412
30	4	TRIM STRIP END CAP	01-90-3413

REF. NO. QTY DESCRIPTION



NOTES:  
 1. FINISHED WITH TRIMSTRIP ITEM #29

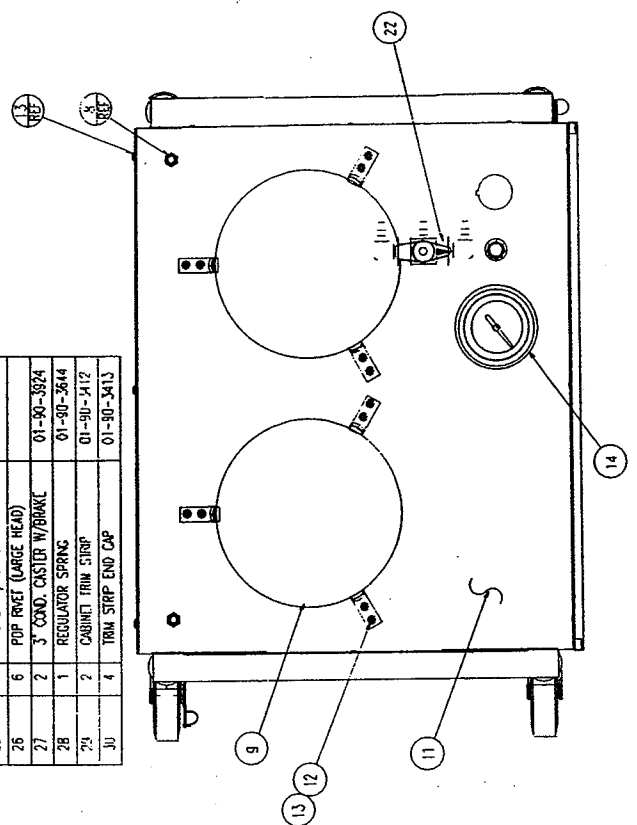
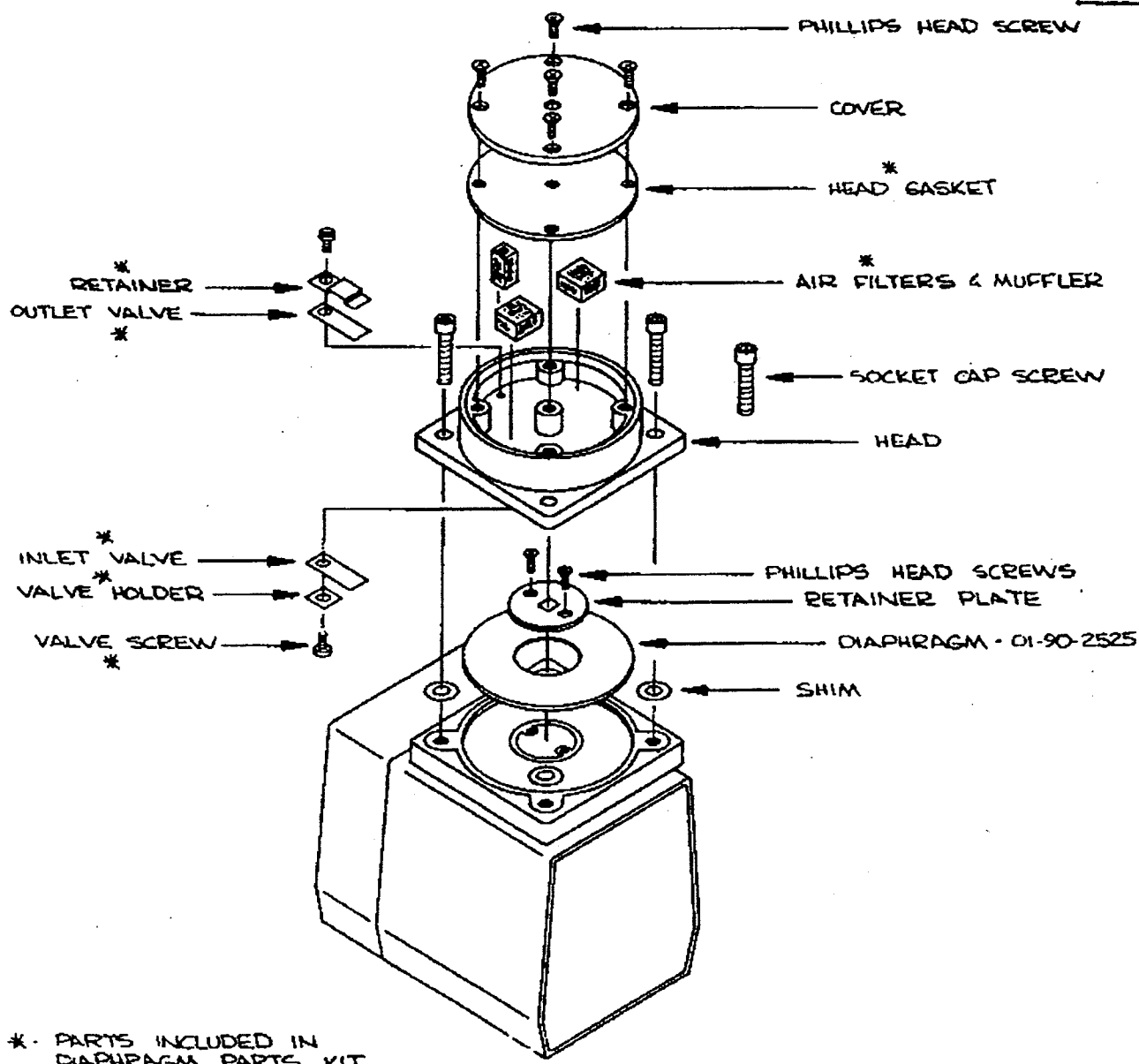


ILLUSTRATION NO. 5



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

DIAPHRAGM PUMP

ILLUSTRATION NO. 6

## 9.0 TROUBLE SHOOTING:

PROBLEM	PROBABLE CAUSES	REMEDY
Motor will not run when on-off switch is rotated to the on position..	1. Switch is faulty	Replace switch.
	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

## 10.0 REPLACEMENT PARTS LIST FOR MODEL 3840:

		Illustration No.
<b>01-90-3515</b>	<b>Cabinet Assembly</b>	
Stainless Steel Top	01-90-3404	5
Leg	01-90-3002	5
Caster Socket	01-90-3411	5
Electrically Conductive Caster	01-90-3923	5
Bottle Bracket	01-90-2697	5
Bulkhead Fitting	01-90-2666	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
Flow Control Valve	01-90-3516	5
<b>01-90-5554</b>	<b>Motor Assembly (115 Volts/60 Hertz)</b>	<b>3</b>
Motor	01-90-5551	3
Switch Assembly	01-90-5548	3
Power Cord Assembly	01-90-5549	3
Pulley	01-90-3511	3

Illustration No.



<b>01-90-5555</b>	<b>Motor Assembly (115 Volts/50 Hertz)</b>	
Motor	01-90-5551	
Switch Assembly	01-90-5548	
Power Cord Assembly	01-90-5549	
Pulley	01-90-3511	
<b>01-90-5556</b>	<b>Motor Assembly (230 Volts/60 Hertz)</b>	
Motor	01-90-5551	
Switch Assembly	01-90-5548	
Power Cord Assembly	01-90-5549	
Pulley	01-90-3511	
<b>01-90-5557</b>	<b>Motor Assembly (230 Volts/50 Hertz)</b>	
Motor	01-90-5551	
Switch Assembly	01-90-5548	
Power Cord Assembly	01-90-5549	
Pulley	01-90-3511	
<b>01-90-3409</b>	<b>Drawer Assembly</b>	<b>1</b>
Drawer Only	01-90-2998	
Drawer Pull	01-90-3408	
<b>01-90-3409</b>	<b>Rear Panel Assembly</b>	<b>1</b>
Rear Panel	01-90-3001	
¼ Turn Fastener	01-90-3405	
Fastener Retainer	01-90-3406	
Cord Clip	01-90-3473	
<b>01-90-2771</b>	<b>Collection Bottle Assembly</b>	<b>2</b>
2800 ml Collection Bottle	01-90-3105	2
	01-90-2768	2
<b>01-90-2768</b>	<b>Cap &amp; Float Assembly</b>	<b>2</b>
Cap (Includes Gasket)	01-90-2393	2
Cap Gasket	01-90-2394	2
Float Gasket	01-90-2395	2
Float Assembly	01-90-2878	2
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 (1/4 NPT)	4

		<b>Illustration No.</b>
01-90-3562	Motor Mount	4
01-90-5550	Vee Belt	4
01-90-2774	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
01-90-9041	Electrical Conductive Tubing 3/16 Inch x 7/16 Inch (Vacuum Tubing)	
01-90-9042	Electrical Conductive Tubing 1/4 Inch x 1/2 Inch x 6 Foot	
01-90-2295	Pump Repair Kit	6
01-90-2525	Pump Diaphragm	6





*Global Support of Life* <sup>SM</sup>  
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Part No. S168-213-001  
Revision B