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 \textbf{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 \textbf{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. \textbf{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 \textbf{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 \textbf{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 \textbf{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 \textbf{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 ¼ 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 ½” 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 reair.

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.
8.0 TROUBLE SHOOTING

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>PROBABLE CAUSES</th>
<th>REMEDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOTOR WILL NOT RUN</td>
<td>1. SWITCH CABLE NOT ADJUSTED PROPERLY</td>
<td>ADJUST CABLE</td>
</tr>
<tr>
<td>WHEN SWITCH IS PULLED UP</td>
<td>2. BAD POWER SOURCE</td>
<td>CHECK POWER OUTLET</td>
</tr>
<tr>
<td></td>
<td>3. MOTOR BAD</td>
<td>REPLACE MOTOR</td>
</tr>
<tr>
<td>MOTOR RUNS BUT NO SUCTION</td>
<td>1. DRIVE BELT BROKEN OR SLIPPING</td>
<td>REPLACE BELT OR TIGHTEN</td>
</tr>
<tr>
<td></td>
<td>2. VACUUM LINES DISCONNECTED OR LEAKING</td>
<td>CHECK ALL TUBING</td>
</tr>
<tr>
<td>LOW SUCTION</td>
<td>1. LOOSE TUBING CONNECTION</td>
<td>CHECK TUBING</td>
</tr>
<tr>
<td></td>
<td>2. COLLECTION BOTTLE TOP LEAKING</td>
<td>CHECK SET-UP</td>
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9.0 REPLACEMENT PARTS LIST
MODEL 3810

<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Stainless Steel Top</td>
<td>01-90-3521</td>
<td>01-90-3000</td>
<td>5</td>
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<tr>
<td>Leg</td>
<td>01-90-3521</td>
<td>01-90-3002</td>
<td>5</td>
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<tr>
<td>Caster Socket</td>
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<td>01-90-3411</td>
<td>5</td>
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<td>Electrically Conductive Caster</td>
<td>01-90-3521</td>
<td>01-90-3470</td>
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<tr>
<td>Bottle Bracket</td>
<td>01-90-3521</td>
<td>01-90-2697</td>
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<td>Push-Pull Cable</td>
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<td>01-90-3416</td>
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<td>Bulkhead Fitting</td>
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<td>01-90-3530</td>
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<td>Vacuum Regulator Body</td>
<td>01-90-3521</td>
<td>01-90-2431</td>
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<tr>
<td>Plastic Tee (1/4 NPT)</td>
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<td>01-90-2445</td>
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<tr>
<td>Vacuum Regulator Needle</td>
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<td>01-90-2429</td>
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<td>Vacuum Regulator Jamb Nut</td>
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<td>Vacuum Regulator Knob</td>
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<td>Vacuum Gauge</td>
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<td>Cabinet Body with Drawer</td>
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<td>01-90-2994</td>
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<th>Component</th>
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<th>Quantity</th>
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<tr>
<td>Motor Assembly (115 v 60 Hz)</td>
<td>01-90-3513</td>
<td>01-90-3422</td>
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<tr>
<td>Switch Lever</td>
<td>01-90-3513</td>
<td>01-90-3423</td>
<td>3</td>
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<tr>
<td>Push-Pull Cable Clamp</td>
<td>01-90-3513</td>
<td>01-90-3511</td>
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</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Part Number</th>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Assembly (115 v 50 Hz)</td>
<td>01-90-3531</td>
<td>01-90-3422</td>
<td>3</td>
</tr>
<tr>
<td>Switch Lever</td>
<td>01-90-3531</td>
<td>01-90-3423</td>
<td>3</td>
</tr>
<tr>
<td>Push-Pull Cable Clamp</td>
<td>01-90-3531</td>
<td>01-90-3511</td>
<td>3</td>
</tr>
</tbody>
</table>
Motor Assembly
(230 v 60 Hz)
  01-90-3422
  01-90-3423
  01-90-3511

Motor Assembly
(230 V 50 Hz)
  01-90-3422
  01-90-3423
  01-90-3511

Drawer Assembly
  01-90-2998
  01-90-3408

Rear Panel Assembly
  01-90-3001
  01-90-3405
  01-90-3406
  01-90-3473

Motor Mounting Plate
  4

Pump with Pulley
  4

Muffler
  4

Muffler End Cap
  4

Brass Elbow (¼ NPT)
  4

Motor Mount
  4

Vee Belt
  4

Plastic “Y”
  1

Cabinet Trim Strip
  1

Trim Strip End Cap
  1

Clip-On Receptacle
  1

Ele. Cond. Tube Pkg.
  1

Pump Repair Kit
  6

Pump Diaphragm
  6

Collection Bottle Assembly
  2

  01-90-3105
  2

  01-90-2394
  2

Cap & Float Assembly
  2

  01-90-2393
  2

  01-90-2395
  2

  01-90-2878
  2

01-90-3532
  Switch Lever
  Push-Pull Cable Clamp
  Pulley

01-90-3533
  Switch Lever
  Push-Pull Cable Clamp
  Pulley

01-90-3409
  Drawer Only
  Drawer Pull

01-90-3407
  Rear Panel
  ¼ Turn Fastener
  Fastener Retainer
  Cord Clip

01-90-3445
01-90-3512
01-90-3060
01-90-3136
01-90-2469
01-90-3562
01-90-3510
01-90-2514
01-90-3412
01-90-3413
01-90-3418
01-90-3560
01-90-2295
01-90-2525

01-90-2771
  2600 ml Collection Bottle
  Cap and Float Assembly

01-90-2768
  Cap (includes Gasket)
  Float Gasket
  Float Assembly