

Form No. 21-00-1021
S-168-125-001
May 1981

Operating Instructions and Spare Parts Manual

Gomco Aspirators

Models 400, 401, 402,
403 and 404



GOMCO Division

Allied Healthcare Products, Inc.

OPERATING PRINCIPLE

The negative and positive pressures of a rotary pump are developed by mounting the rotor off center in relation to the inside diameter of the pump housing. The three brass slides in the rotor wipe past two portholes in a clockwise rotation. This action increases and decreases the cubic content of the air in the pump head, and thereby, produces the negative and positive pressures.

OPERATING PROCEDURE

1. Be sure all tubing, including the length from bottle to pump is clean and thoroughly dry inside and out.
2. Be sure that the patient tube is connected to the side of the bottle top having the longer metal tube extending into bottle.
3. Check cotton packing in muffler for excessive oil or 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.
4. Oil for the pump is supplied from reservoirs located in the pump cover or the top of the stands. Oil should be replenished every 24 hours of pump service.
5. Be sure all overflow protection is working properly.
6. The on/off switch should be in the off position.
7. 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. Receptacle should be marked "Hospital Grade" to insure grounding.
8. Turn on/off switch to on.
9. Check degree of vacuum by pinching closed patient tube. The amount of vacuum in inches of mercury will register on the vacuum gauge. To increase vacuum, turn regulator knob clockwise. To decrease vacuum, turn knob counter clockwise.
10. Before using your rotary 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.

11. Your Rotary Pump is now ready for use.

CARE AND OPERATION OF OVERFLOW PROTECTION DEVICES

Your new Gomco Pump comes equipped with one of the two overflow protection devices described below. With proper care and maintenance, these devices will operate without problems for years.

GOMCO AEROVENT

1. The Gomco Aerovent is a safety device designed to protect the pump from flooding. When the contents of the vacuum bottle reach the limits of safety, the weight of the bottle and contents causes the suction line from the pump to be opened to atmosphere causing suction to cease. When this occurs, first shut the pump off. When Aerovent opens to atmosphere it does not shut off the pump. Second, remove the stopper or cap, then remove the full bottle. Replace with an empty Gomco bottle and install the cap or stopper. Third, turn on pump and suction will automatically resume. **CAUTION:** The Gomco Aerovent is adjusted at the factory to become activated when the fluid level reaches the fill line permanently marked on Gomco Collection Bottles. Use of other bottles will cause the Aerovent to possibly malfunction, causing pump damage.

2. If the Aerovent fails to operate properly, or if there is leakage at the Aerovent, it will require cleaning. It can become contaminated by spillage of fluid over the bottle plate and shelf. This cleaning requires loosening the lock nut and unscrewing both the nut and plate, then lift up the plate and spring and clean everything thoroughly. Lightly lubricate the stem of the plate. Then place spring over shaft before putting stem into vent casting, tighten plate and lock with nut at desired shut off point.

3. If for any reason, it is necessary to change the shut off point, this can be done by loosening the lock nut at the bottom of the plate and then turning the plate clockwise to increase fluid collection before break of suction or counterclockwise to decrease fluid collection before

also has been thoroughly run through the pump. Allow pump to run for about ten to fifteen minutes.

5. After stopping pump, wipe excess oil from valve and muffler, replace cotton loosely in muffler and reinstall overflow valve.

6. Fill oil reservoir to capacity in pump cover.

Models with Filter-Muffler of the Cylinder Type (Model 404).

1. Remove the gallon bottle and tip unit on its back.

2. Remove the compression nut on the suction side of the pump casting and move the brass tubing aside.

3. Remove cotton from muffler after removing muffler cap.

4. Hold cloth over the muffler opening. Start the motor and drop enough kerosene into the suction side of the pump casting until it has been sucked through the pump and expelled through the cloth.

5. Keep pump running until most of the kerosene has been expelled and then place several drops of Gomco Electric Motor Oil into the suction side of the pump casting until it also has been thoroughly run through the pump. All pump to run for about ten to fifteen minutes.

6. After stopping pump, wipe excess oil from valve and muffler, replace cotton loosely in muffler and reinstall overflow valve.

7. Fill oil reservoir to capacity in pump cover.

8. Replace brass tubing and compression nut.

CLEANING THE PUMP

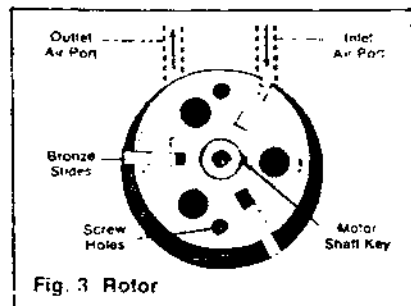
All Models

1. Have switch off on pump motor and make sure the line cord is disconnected from the electric receptacle.

2. Remove four (4) screws from pump cover — cut paint along parting line of cover and casting with sharp knife to keep it from chipping.

3. Remove pump cover — wipe it dry and remove any foreign particles.

4. Remove rotor and three (3) brass slides by putting two (2) cover screws into threaded holes in face of rotor and prying rotor out slowly with screwdriver as a lever or use the Gomco Rotor Puller, part #5645



5. Clean slides and polish gently by rubbing on fine emery paper over a flat surface — burrs are to be removed from top edges of blade only.

6. Clean rotor in same manner as slides — after cleaning rotor, put the two (2) screws back into rotor face to prevent putting rotor in upside down.

7. Wash all parts in kerosene and wipe dry — be sure no emery is in air ring of rotor.

8. Clean inside wall of pump casting by wiping with kerosene and remove all foreign matter.

9. Wipe inside of pump casting with Gomco Electric Motor Oil — also wipe surfaces of rotor and slides with oil.

10. Put rotor back into pump. Be sure key on shaft and keyway of rotor are lined up so as to prevent burring. Remove two (2) screws. do not use steel hammer to drive on rotor, but use a cushion of wood or fiber or some soft metal to firmly seat rotor and to prevent scratching of rotor.

11. Place slides in rotor (see Fig. 3). Each slide is numbered and must be replaced in same numbered slot as the slide. Both numbers of slides and rotor should be visible from front of pump. Place slides so flat end is toward center of rotor and rounded end is toward outside diameter of rotor.

12. Replace pump cover after making sure all dirt is wiped from it and the surface to which it is applied. Before seating pump cover, place an amount of oil about the size of a quarter in the center of the cover. Insert four (4) screws and slightly tighten pump cover. Back screws off 1/4 turn.

13. Plug line cord into proper receptacle and turn on pump. After pump has run, alternately tighten cover screws.

14. Fill oil reservoirs and give final check for suction and pressure by gauge reading.

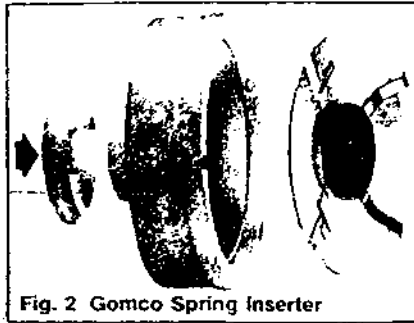


Fig. 2 Gomco Spring Inserter

CARE AND MAINTENANCE

OILING THE PUMP

1. Models with cover oil reservoirs (Models 400, 401, 402, 403, 404). The reservoir in the pump cover should be filled every twenty-four hours of pump service with Gomco Electric Motor Oil.

2. Gomco Electric Motor Oil is formulated specially for Gomco equipment. The use of any other motor oil could cause undue wearing of parts or sluggish action of pump.

OILING THE MOTOR

The motor of a Gomco Pump has two oil caps, one at each end. Add 4 drops of Gomco Motor Oil in each tube twice yearly. Oiling should be limited to only twice yearly to prevent over oiling. This is only required for model numbers 400 and 401.

2. All other motors are permanently lubricated.

MUFFLERS

1. Models with Bar Type Filter-Muffler (Models 400, 401, 402, 403). Replace cotton in this muffler-filter when it is discolored or when a semblance of oil appears at the muffler end. Remove the end cap from the muffler bar — take out the old cotton and insert clean cotton. Caution should be used to pack the cotton loosely, as the suction power of the pump will be greatly reduced if the muffler is too tightly packed. Pack muffler while pump is off. Insert end cap.

2. Model 404 has a Cylinder Type Filter-Muffler. The cotton in the cylinder type muffler should be replaced when discolored, or when a semblance of oil shows at the cylinder cap. Remove the cap, take out the old cotton and replace with clean cotton. Caution should be used to pack

the cotton loosely as the suction power of the pump will be greatly reduced if the muffler is too tightly packed. Pack muffler while pump is off. Insert end cap.

VACUUM BOTTLE ASSEMBLY

The Vacuum Bottle should be emptied after each use and should not be allowed at any time to fill above the caution line on the label.

Care should be taken in replacing the tubing to make certain the the patient tube is connected to the side of the bottle top having the longest metal tube extending into the bottle.

REMOVING TOP (Model 404)

If it becomes necessary to remove the top of your unit, the following steps must be taken:

1. Remove plastic front by removing the two (2) wing nuts in the back of the panel.
2. Remove the two (2) heyco bushings from the back panel.
3. Disconnect the power switch wires.
4. Remove the oil tube from the oil reservoir.
5. Remove the four (4) bolts holding the top to the pedestal.
6. Lift top off.

PUMP FAILURE

A unit that has been slightly flooded or becomes sluggish with old oil will show a lowered degree of vacuum or pressure. It may also become noisy and run unusually hot. These difficulties may usually be corrected by flushing.

FLUSHING THE PUMP

Models with Filter-Muffler Bar and with Safety Overflow Valve mounted on the top of pump casting (Models 400, 401, 402 and 403).

1. Remove overflow valve. Use proper size wrench.
2. Remove cotton from muffler after removing muffler cap.
3. Hold cloth over muffler opening — start motor and drop enough kerosene into center of bracket until it has been sucked through pump and expelled through to the cloth.
4. Keep pump running until most of the kerosene has been expelled and then place several drops of Gomco Electric Motor Oil in the bracket opening until it

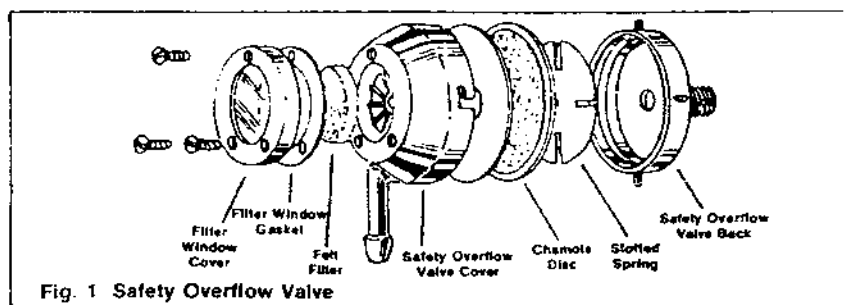


Fig. 1 Safety Overflow Valve

break of suction. After the desired shut off point is reached, the lock nut should again be tightened.

CAUTION: Check Aerovent before each use to make sure it is functioning properly by filling the bottle to the full line and making sure the Aerovent opens to atmosphere. If the Aerovent is not functioning properly, the pump can be flooded with fluid. If flooding occurs, do not attempt to operate the pump. Refer servicing to qualified personnel.

GOMCO SAFETY OVERFLOW VALVE

(See Fig. 1)

The valve operates on the principle that a chamois disc permits the flow of air through it when dry. Any fluid striking and saturating the chamois causes the pores to swell and thereby stopping the passage of air. When the chamois becomes moist (restricting the air flow) the vacuum of the pump causes the chamois to push against the formed spring which shuts off the air flow through the pump. Unit may be used without a chamois disc in emergencies but there will be no overflow protection.

When the valve closes, the pump should immediately be shut off and the felt filter and chamois disc replaced.

The felt filter is placed into the head of the safety overflow valve to collect any moisture droplets that may get drawn into the intake tube.

The felt filter should be replaced in the following manner:

1. Shut off pump.
2. Remove cover on valve back.
3. Take out three screws and filter window.
4. Remove gasket.
5. Remove felt filter and discard.
6. Wipe clean and dry all parts.

7. Put in new filter and attach gasket and window making sure that window is tight.

TO REPLACE CHAMOIS DISC

1. Remove cover of valve while pump is running.
2. With chamois removed and spring in closed position, wipe out the moisture from valve back.
3. Shut off pump and note that the spring releases from valve back.
4. Press spring to back of valve and remove any moisture in lower portion of valve back.
5. Start pump and note that the spring will remain open permitting air to enter pump.
6. Gently insert new chamois in place of the old with pump running and fasten on overflow valve cover.
7. Remove moisture from vacuum regulating valve and tubing attached to overflow valve.
8. Attach tubing from pump to valve and check to make sure suction is present.

If the valve closes after reassembly when the motor is running, this is an indication that moisture may be reaching the chamois disc. The valve should be disassembled and dried more thoroughly or replaced. Replace chamois disc. There is a chance that the valve may close by itself if the tubing is compressed and released suddenly — stop the pump for three seconds and it will reopen.

If no moisture is reaching the valve and it still closes, the difficulty may be that the spring has been bent in a convex condition or the legs of the spring may have been bent to flat. Should this condition occur, remove the spring and replace with new spring. It is suggested that a Gomco Spring Inserter, Part #5131 (see Fig. 2) be used to properly insert spring.

REPLACEMENT PARTS LIST

- 2000 — Plastic Tubing (6 ft. and 1 ft. piece)
- 2304 — On-Off Switch
- 2335 — Flush Mount Vacuum Gauge for 404
- 3330 — Metal Tubes for 5025 Bottle (2 per set)
- 5000 — 32 oz. Vacuum Bottle
- 5025 — One Gallon Vacuum Bottle
- 5040 — 32 oz. Rubber Bottle Cap
- 5085 — Wire Hold Down Clamp for 5025 Bottle
- 5108 — Rubber Stopper for 5025 Bottle
- 5110 — Overflow Valve Cover
- 5120 — Overflow Valve Cover Gasket
- 5130 — Overflow Valve Slotted Spring
- 5131 — Spring Inserter Tool
- 5140 — Overflow Valve Back
- 5150 — Overflow Valve Complete
- 5200 — Chamois Disc (1 dozen minimum)
- 5210 — Felt Filter Disc (1 dozen minimum)
- 5345 — Adjusting Valve
- 5460 — Vacuum Gauge 30" for 400, 401, 402, 403
- 5645 — Rotor Putter Tool
- 5990 — Filter Window Cover
- 6000 — Filter Window Gasket
- 6020 — Filter Window Screws
- 6142 — Line Cord with Hospital Grade Plug
- 6143 — Hospital Grade Plug
- 6260 — Rubber Pad for Aerovent Platform
- 6810 — Gomco Electric Motor Oil (4½ oz.)
- 8140 — Aerovent Rubber Washer

Nothing contained herein is to be construed as a recommendation for any use which is in violation of any existing patent, foreign or domestic, or of applicable laws and regulations.