



**LIQUID OXYGEN
30, 40, AND 55 LITER BASE UNITS
1 LITER PORTABLE UNIT**

OPERATOR'S MANUAL



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SPECIAL NOTES

WARNING / CAUTION notices as used in this manual apply to hazards or unsafe practices that could result in personal injury or property damage.

NOTICE

The information contained in this document is subject to change without notice.

WARNING

DO NOT install, maintain or operate this equipment without reading, understanding and following proper instructions; otherwise, injury or damage may result.

Federal law restricts this device for sale by, or on the order of, a licensed physician.

Administration of Liquid Oxygen may be hazardous or contraindicated. For use only by or under the supervision of a licensed practitioner who is experienced in the use and administration of Liquid Oxygen and is familiar with the indications, effects, dosages, method and frequency and duration of administration, and with hazards, contraindications, and side effects and the precautions to be taken.

If at anytime the patient or attendant concludes he/she is receiving an insufficient amount of oxygen, the supplier and/or physician should be contacted immediately. No adjustments should be made to the flow rate unless prescribed by a physician.

This system delivers only medical grade (U.S.P.) oxygen. Oxygen supplied by the system is supplemental and is not to be considered life-supporting.

DO NOT store the Base Unit and Portable coupled together. Separate units when not in use. Make sure units are always in the ZERO (OFF) position when not in use.

If you have any questions about the equipment or its use, call your Dealer or Service Representative.

Avoid creation of any spark near medical oxygen equipment. This includes sparks from static electricity created by any type of friction.

All electrical equipment near oxygen units must be properly grounded.

If you suspect that a unit has been damaged, contact your Service Representative immediately. Your Service Representative must handle all maintenance.

Keep all units out the reach of children.

The base unit must be filled only by an authorized PENOX Service Representative.

SAVE THESE INSTRUCTIONS

IMPORTANT SAFEGUARDS

WARNING

RISK OF FIRE:

Oxygen does not burn. However, it will accelerate burning of flammable materials.

TO PREVENT FIRE:

DO NOT SMOKE when operating this equipment. “NO SMOKING” sign should be prominently displayed.

Keep the equipment at least 5-feet away from any electrical appliances such as radios, TV's, air conditioners, fans, electric razors, etc.

Keep the equipment away from open flames or heating sources such as furnaces or stoves.

Keep flammable materials away from the equipment such as oils, grease and aerosol sprays. These will ignite and burn quickly in the presence of concentrated oxygen.

TO PREVENT HIGH CONCENTRATIONS OF OXYGEN:

Keep the units in a well ventilated area at all times.

Turn OFF flow rate selector when the equipment is not in use.

Keep the units upright at all times. If the units are turned over, gaseous oxygen will escape. Should this happen, ventilate the area. If a liquid spill should occur for any reason, open doors and windows to ventilate the area.

DO NOT wear the Portable under any clothing. Portable must be worn on the outside of any clothing and be visible at all times.

RISK OF FROSTBITE:

Liquid oxygen is extremely cold (-297°F [-183°C]). Contact with liquid oxygen can cause frostbite. **DO NOT** touch frosted fittings or piping. If there is any exposure to liquid oxygen, contact a physician **IMMEDIATELY**.

OTHER PRECAUTIONS:

Never attempt to lubricate the oxygen equipment.

Never tamper with the equipment. Doing so could create a hazardous condition and possibly cause the equipment to malfunction. If you have any questions, call your liquid oxygen system Dealer or Service Representative.

SPECIFICATIONS

	30 Liter Base Unit	40 Liter Base Unit	55 Liter Base Unit	1 Liter Portable Unit
Delivery Mode	Continuous	Continuous	Continuous	Continuous
Capacity: Liquid Liters	31.9 liters	39.8 liters	55.0 liters	1.0 liter
Equivalent Oxygen Gas (Gaseous Liters) Ntp:	27,424	34,228	46,200	840
Selectable Flow Rates (LPM)				
Standard Flow Model:	0.25, 0.50, . 0.75, 1.00, 1.50, 2.00, 2.50, 3.00, 4.00, 5.00, 6.00	0.25, 0.50, . 0.75, 1.00, 1.50, 2.00, 2.50, 3.00, 4.00, 5.00, 6.00	0.25, 0.50, . 0.75, 1.00, 1.50, 2.00, 2.50, 3.00, 4.00, 5.00, 6.00	0.25, 0.50, . 0.75, 1.00, 1.50, 2.00, 2.50, 3.00, 4.00, 5.00, 6.00
High Flow Model:	0.50, 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 8.00, 10.00, 12.00, 15.00	0.50, 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 8.00, 10.00, 12.00, 15.00	0.50, 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 8.00, 10.00, 12.00, 15.00	0.50, 1.00, 2.00, 3.00, 4.00, 5.00, 6.00, 8.00, 10.00, 12.00, 15.00
Operating Pressure (Psig)	20	20	20 or 50	20
**Average Fill Time warm:	15 minutes	15 minutes	20 minutes	95 seconds
**Average Fill Time cold:	10 minutes	10 minutes	14 minutes	45 seconds
***Normal Evaporation Rate OPERATING: NON-OPERATING	ZERO 1.8 LBS/DAY	ZERO 1.8 LBS/DAY	ZERO 2.0 LBS/DAY	ZERO 0.064 LBS/DAY
DIMENSIONS				
Height (in/cm)	25.8 (65.5)	27.8 (70.6)	36.0 (91.4)	13.6 (34.5)
Width (in/cm)	16 (40.6)	16 (40.6)	16 (40.6)	6.9 (17.5)
Depth (in/cm)	16 (40.6)	16 (40.6)	16 (40.6)	4.1 (10.4)
WEIGHT:				
Empty (lbs/kg)	47 (21.3)	55 (30)	66.8 (30.3)	4.4 (2.0)
Full (lbs/kg)	127 (57.25)	155 (70.4)	204.9 (93.0)	6.9 (3.1)
Maximum Flow Duration @ 2LPM Continuous (hrs)	215	270	385	7

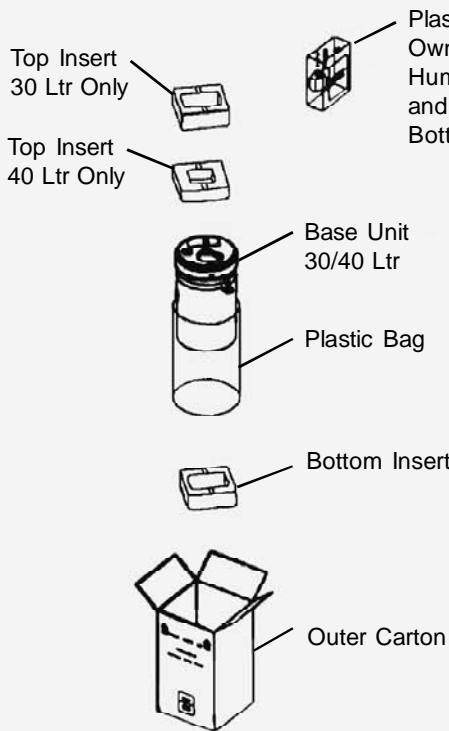
* Flow rates are at NTP in LPM

** Average fill time is at a fill pressure of 30 to 35 psig. Performance varies with environmental and filling conditions. (Times shown are for 20 psi systems).

*** Incorporates an economizer valve permitting no evaporation loss with continuous use.

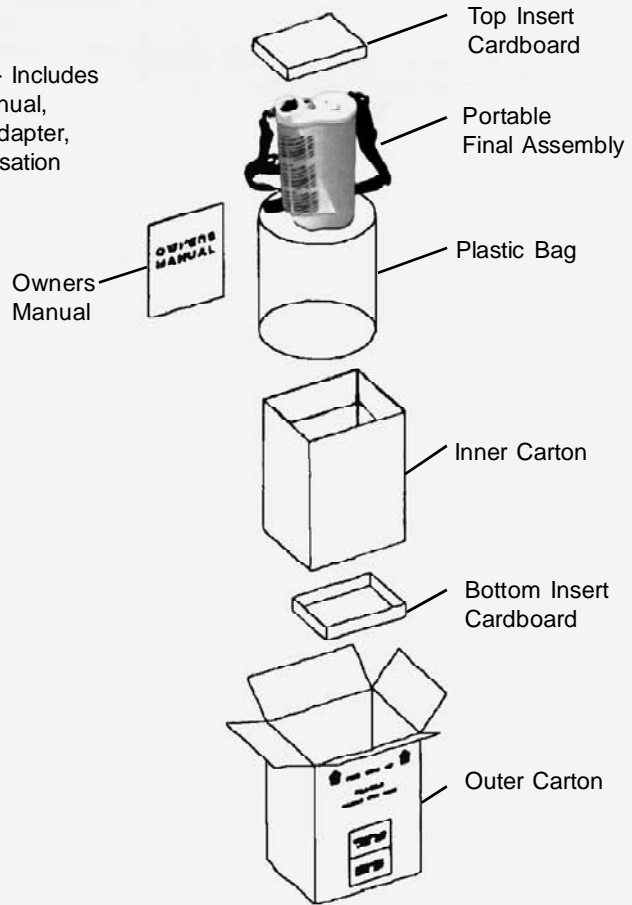
PACKAGING / HANDLING

PACKAGING



PENOX 30/40/55 BASE UNIT

Plastic Bag - Includes
Owner's Manual,
Humidifier Adapter,
and Condensation
Bottle



PENOX PORTABLE

HANDLING PROCEDURES

UNPACKING

1. Check for any obvious damage to the carton or its contents. (If damage is evident notify your local Penox dealer.
2. Remove all the loose packing from the carton.
3. Carefully remove all the components from the carton.

NOTE: Unless the Penox 30/40/50 Base Unit and / or Penox 1 Liter Portable are to be used immediately, retain boxes, containers and packing materials for use in storing the equipment until usage is required.

INSPECTION

1. Examine exterior of the equipment for nicks, dents, scratches or other damage. Inspect all components.

STORAGE

1. Store the repackaged equipment in a dry area.
2. DO NOT place other objects on top of the repackaged equipment

PENOX 30/40/55 BASE UNIT FEATURES

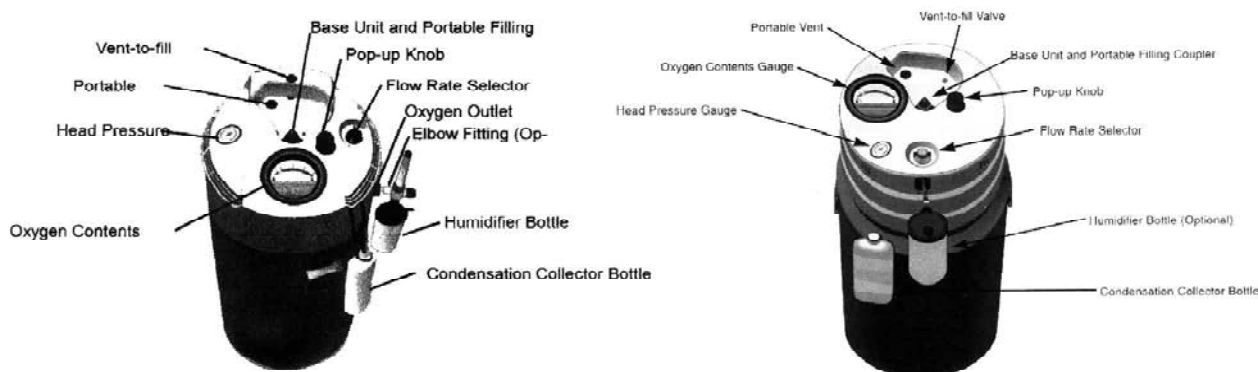


FIGURE 1 - PENOX 30/40/55 BASE UNIT FEATURES

BASE UNIT COMPONENTS - DEFINITION OF TERMS

Flow Rate Selector: Marked in liters per minute increments. It will activate and set the flow of oxygen to the user.

Condensation Collector Bottle: Captures the normal condensation that occurs as the cold liquid oxygen travels through the warming coils. This moisture drips onto the Base Unit and is channeled to the condensation bottle. The bottle must be emptied periodically.

Elbow Fitting (Optional): Coupling for oxygen dispersal to patient. Allows Base Unit to be used as a breathing device in conjunction with the humidifier bottle.

Humidifier Bottle (Optional): When filled with water, it adds moisture to the dry oxygenated air to relieve dryness and sensitivity in the nasal passages and sinus membranes, particularly at higher flow rates.

Roller Base (Optional): Allows for easier transport of the Base Unit from one area to another.

Base Unit and Portable Filling Coupler: Allows the Portable to be filled from the Base Unit and the Base Unit to be refilled from an external source when empty.

Vent-to-Fill Valve (Base Unit): As the liquid is transferred into the Base Unit, heat is absorbed and the liquid begins to vaporize. This valve allows the vapor to exhaust from the Base Unit and permits maximum filling capacity to be attained. This valve should only be opened during the filling cycle. Never leave this valve open, it will let moisture in to the system. NOTE: WHEN BASE UNIT IS EMPTY, CONTACT THE DEALER.

Portable Vent: As the Portable unit is filling, a vent tube on the bottom allow vapors to exhaust from the Portable through the Base Unit. The Base Unit vent sets in line under the Portable vent tube to allow for this dispersal.

Oxygen Contents Gauge: Indicates the level of oxygen remaining in the Base Unit.

Oxygen Outlet Connector (Optional): Makes the Base Unit accessible as an oxygen dispersing unit. Will accept C.G.A. approved humidifier bottle adapter for use with an optional humidifier bottle.

Humidifier Bottle Adapter (Optional): Attaches to the oxygen outlet connector to allow the use of a humidifier bottle when the Base Unit is used to dispense oxygen to the patient.

Head Pressure Gauge: Indicates internal pressure of Base Unit.

Pop-up Knob: Removes bottom-fill type Portable units from a top-fill Base Unit when a fill is completed.

INTRODUCTION

BASE UNIT / PORTABLE DESCRIPTION

The Penox Product Family of Base Unit / Portable systems is designed to store and deliver oxygen to the patient at a flowrate prescribed by a physician.

The Base Unit is for home use and must be refilled ONLY by a liquid oxygen dealer. The refill frequency depends on the rate of use. The remaining amount of oxygen in the Base Unit is determined by the Oxygen Contents Gauge.

The Portable, which is filled from the Base Unit, provides a sufficient supply of oxygen to increase the mobility of the end user. The remaining amount of oxygen in the Portable is determined by the Oxygen Contents Gauge.

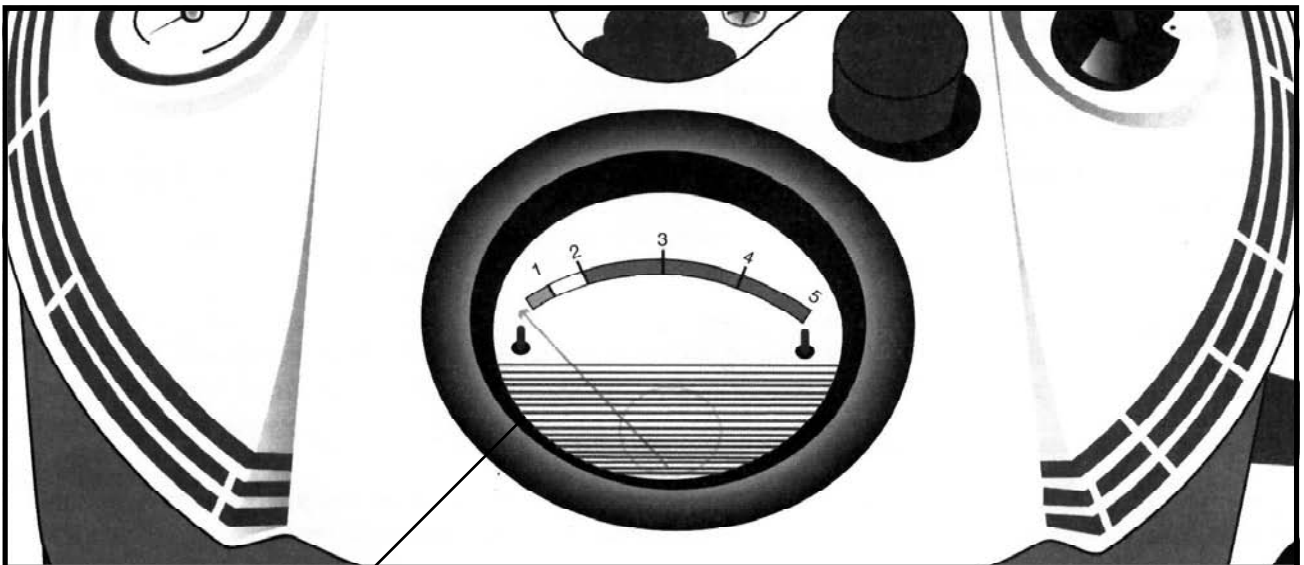
The user must educate him/herself about all phases of operation of the units.

PENOX 30/40/55 LITER BASE UNIT

BASE UNIT / PORTABLE DESCRIPTION

The oxygen contents gauge gives an accurate reading of the oxygen in the Base Unit. The contents gauge should be monitored to ensure an adequate supply is available.

The contents gauge has a color coded, graduated scale and an indicating needle to display the level of oxygen remaining in the Base Unit. An indicating needle in the green area, at full, indicates full; at full down to the start of the yellow area indicates partially full; at the yellow area indicates caution, the unit is nearing empty; and the red area indicates empty and the Base Unit needs to be filled as soon as possible. Call your Dealer or Service Representative immediately.



Oxygen contents indicator - Color coded and numbered for easy reference

FIGURE 2 - BASE UNIT OXYGEN CONTENT GAUGE

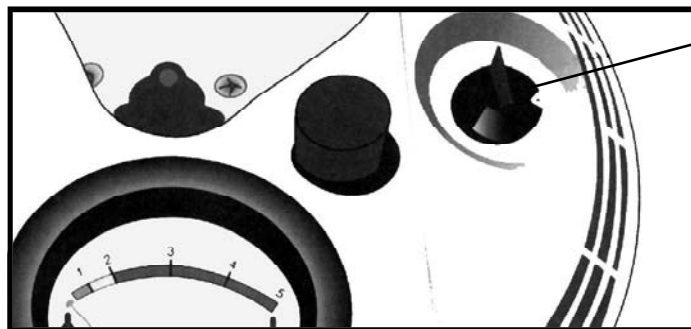
FLOW RATE SELECTOR (FIGURE 3)

The flow rate selector must be turned in a clockwise direction until the prescribed flowrate is indicated in the window.

WARNING

DO NOT select a different setting unless your physician has prescribed a change. The oxygen setting **MUST** be set to the exact flowrate. The oxygen will **NOT** flow if the knob is between settings.

Always turn the knob to ZERO (OFF) when not in use.



Flow Rate Selector
(Control Knob)

FIGURE 3 - FLOW RATE SELECTOR

BASE UNIT OPERATING INSTRUCTIONS

The type of administering equipment to be used, as well as the flowrate and time of usage, must be prescribed by a physician.

The Base Unit will be delivered full and can be used to supply liquid oxygen to fill a portable through the fill coupler or for direct patient use through the oxygen outlet and flow control device on the Base Unit. The oxygen outlet fitting on the Base Unit is a standard oxygen outlet connection. An additional fitting permits use of an oxygen humidifier.

Your dealer will check to be sure that your administering equipment has the proper type of fittings for using the Base Unit. The dealer will instruct you how to connect the equipment to the Base Unit.

An oxygen mask, nasal cannula or other types of administering equipment can be used to deliver oxygen.

WARNING

NEVER depress the filling coupler on the Base Unit. This will permit cold gases and liquid to escape. Contact with liquid oxygen can cause frostbite.

BREATHING FROM THE BASE UNIT

When the Base Unit is used for breathing, a flow rate selector is built in to provide the prescribed flowrate.

1. Check Oxygen Contents Gauge to verify adequate oxygen supply.
2. Connect Cannula to the oxygen outlet connector of the Base Unit, or to the humidifier bottle outlet.

Humidifier Usage Instructions

Connect Humidifier (if prescribed)

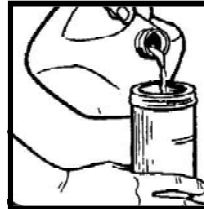


FIGURE 4 - FILLING THE HUMIDIFIER

3. Fill humidifier with distilled water to the level shown by the manufacturer.

WARNING

DO NOT overfill the humidifier.

4. Attach lid to humidifier bottle.

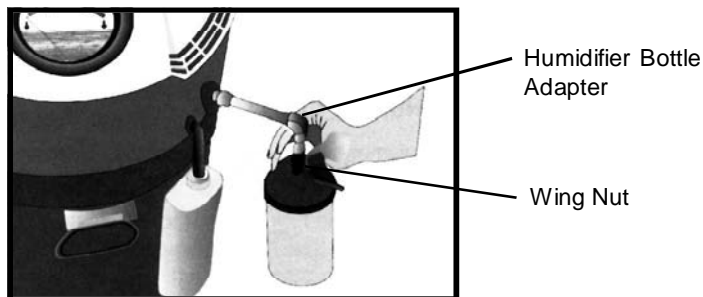


FIGURE 5 - ATTACHING HUMIDIFIER TO THE BASE UNIT

5. Attach the humidifier adapter to the Base Unit by turning the wing nut on the lid of the humidifier bottle counter clockwise until it is securely fastened to the humidifier bottle adapter on the Base Unit .

Oxygen Tubing



FIGURE 6 - ATTACHING THE OXYGEN TUBING

6. Attach oxygen tubing to the humidifier bottle and then a cannula or oxygen mask.
7. Turn the flow control knob clockwise to the prescribed rate.
8. Adjust the cannula/oxygen mask to the face to receive oxygen comfortably.

WARNING

**DO NOT select a different setting unless your physician has prescribed a change.
The oxygen setting MUST be set to the exact flowrate.
The oxygen will NOT flow if the knob is between settings.
Always turn the knob to ZERO (OFF) when not in use.**

9. Check the humidifier, if applicable, to ensure that the lid is tight and there is a steady flow of bubbles. This indicates that the oxygen is flowing.
10. If using a cannula/oxygen mask, check that all fittings are tight and adjust the cannula/oxygen mask to the face and breath normally.
11. The Oxygen Contents Gauge will show how much liquid is remaining. It should be checked periodically to ensure that the supply is adequate.
12. Verify/connect condensation drain tube and condensation collector bottle to the 1/2-inch stainless draintube on the Base Unit (FIGURE 7).

NOTE: If usage is at higher flowrates, condensation will increase. Check condensation bottle and empty when necessary (FIGURE 7).

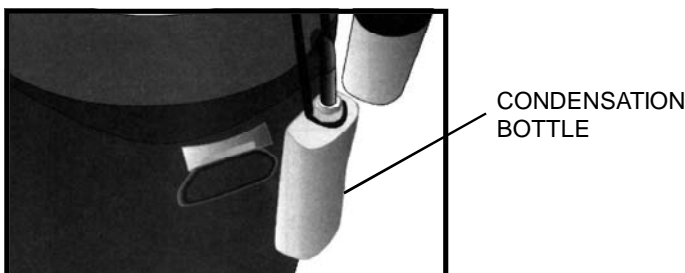


FIGURE 7 - BASE UNIT CONDENSATION BOTTLE

CONDENSATION BOTTLE REMOVAL

1. Pull bottle out of the hanger.
2. Pull bottle down from tubing and remove bottle.
3. Empty bottle and clean with a household dishwashing liquid.
4. Reinstall bottle.



FIGURE 8 - CONDENSATION BOTTLE REMOVAL

USAGE TIMES

Use times stated in the table are only approximate. Variables such as level of filling, idle time since filling and flowrate setting will effect duration of performance.

As you develop your own time of use, you will be able to predict times with reasonable accuracy.

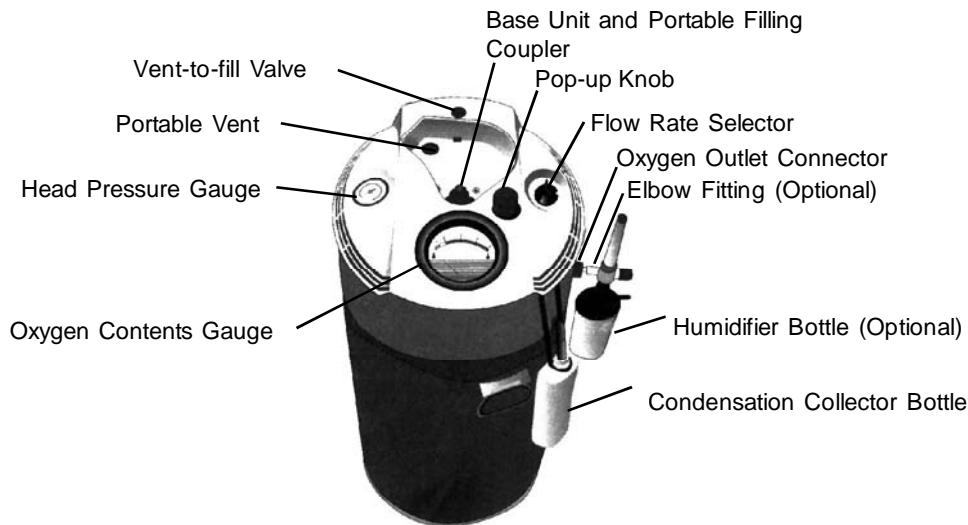
FLOW RATE SETTINGS (LPM - NPT)	APPROXIMATE DURATION OF PERFORMANCE (N.E.R. 0.075#/HR)			
	30 LITER BASE UNIT	40 LITER BASE UNIT	55 LITER BASE UNIT	
			20 PSIG	50 PSIG
1	18.08 Days	22.55 Days	32.08	30.36
1.5	12.05 Days	15.04 Days	21.39	20.24
2	9.04 Days	11.28 Days	16.04	15.18
2.5	7.23 Days	9.02 Days	12.83	12.15
3	6.03 Days	7.52 Days	10.69	10.12
4	4.52 Days	5.64 Days	8.02	7.59
5	3.62 Days	4.51 Days	6.42	6.07
6	3.01 Days	3.76 Days	5.35	5.06
7	2.58 Days	3.22 Days	4.58	4.34
8	2.26 Days	2.82 Days	4.01	3.80
10	1.81 Days	2.26 Days	3.21	3.04
12	1.51 Days	1.88 Days	2.67	2.53
15	1.21 Days	1.50 Days	2.14	2.02

WARNING

Use only Penox supplied, restricted (flow limiting) flow meters on base units equipped with an externally attached flowmeter. Restricted flowmeters limit flow to a predetermined, safe level.

Unrestricted flow meters may allow a flow that exceeds the warming capacity of the base unit heat exchanger putting the patient at risk by supplying gas below a safe temperature.

TROUBLE SHOOTING



Base Unit Only		
Problem	Possible Cause	Solutions
The filling couplers cannot be disconnected.	There is ice on the filling couplers. Note: This problem is the result of water or contamination on the couplers at the beginning of the fill.	When filling a Portable unit from the Base Unit, close the Vent-to-Fill lever on the Portable to allow both containers to equalize in pressure. This terminates the fill transfer through the filling coupler. Then wait for the filling couplers to thaw.
It is impossible to start a fill, or there is excessive time elapse during the fill.	The Vent-to-Fill lever is not open.	Open the Vent-to-Fill (valve).
No Flow	Unit empty. No Pressure. Flow Rate Selector in off position. Problem internally	Call your Dealer or Service Representative Immediately. Call your Dealer or Service Representative Immediately. Turn to prescribed setting. Call your Dealer or Service Representative Immediately.
Oxygen Contents Gauge: Erroneous gauge reading.	Gauge malfunction.	Call your Dealer or Service Representative Immediately.

PENOX 1 LITER PORTABLE FEATURES (FIGURE 1)

WARNING

DO NOT wear the Portable under any clothing. Portable MUST be worn on the outside of any clothing and be visible at all times.

Familiarize yourself with the unit before attempting use. If there are any questions call your Service Representative or Dealer.

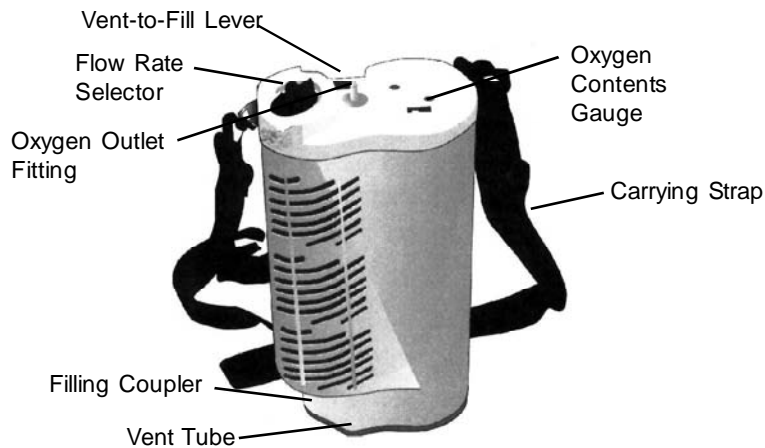


FIGURE 1 - PENOX 1 LITER PORTABLE FEATURES

PORTABLE COMPONENTS - DEFINITIONS OF TERMS

Flow Rate Selector: Marked in liters per minute increments. It will activate and set the flow of oxygen to the user.

Filling Coupler (Portable Unit): Connects to Portable unit to the Base Unit for filling of the Portable. See "Filling the Portable" in this manual.

Vent-to-Fill Lever: Opens the Vent-to-Fill Valve on the Portable. To be opened when filling the Portable unit. It allows vaporized liquid to be vented from the unit and thus maximizes filling capacity. See "Filling the Portable" in this manual. This valve should be opened during the FILLING PROCESS ONLY. Leaving the valve open while the Portable is in use or during non-usage time will allow moisture to contaminate the system.

Vent Tube: When the Vent-to-Fill Lever is opened, this tube allows the vaporized liquid to be routed from the Portable through the Base Unit Portable Vent located on the Base Unit shroud.

Oxygen Contents Gauge: Indicates the level of oxygen remaining in the Portable.

Carrying Strap: Connects to the Portable unit for convenient transportation and is adjustable to ensure comfort. It can be used as an over the shoulder strap or carrying handle.

Oxygen Outlet Fitting: The delivery portion of oxygen from the Portable. The fitting is barbed to securely hold the crush-proof tubing for safe oxygen delivery to the user.

PENOX 1 LITER PORTABLE PORTABLE OXYGEN CONTENTS GAUGE (FIGURE 2)



FIGURE 2 - CHECKING THE OXYGEN CONTENTS GAUGE OF THE PORTABLE

ATTACHING DIFFERENT PORTABLES TO AN PENOX BASE UNIT - TOP FILL MODELS (FIGURE 3)

WARNING

Stay with the units until the fill is completed so that immediate action can be taken if a problem should occur.

The Portable is filled from the Base Unit as follows:

NOTE: The fill connectors must be clean and dry in order to avoid malfunctions due to freezing. Contamination may cause the couplings to seize and cause difficulty in separating the Portable from the Base Unit.

1. Check the Oxygen Contents Gauge to be sure that the Base Unit has an ample supply of liquid for filling purposes. The Base Unit Oxygen Contents Gauge should NOT indicate that the Base Unit needs to be filled soon (Indicator needle of the Oxygen Contents Gauge is in the yellow area).
2. Remove the protective cover on the Base Unit fill coupler.
3. Turn the Portable flow rate selector to zero (OFF).
4. Check the fill couplers on the bottom of the Portable and top of Base Unit for presence of moisture. If moisture exists, wipe the coupler with a clean, dry, lint-free cloth.

5. Hold the Portable in upright position with both hands, align the couplers and lower the Portable into position so that the Base Unit portion of the coupler enters the Portable connector (FIGURE 3).
6. Push down on the Portable slightly.

WARNING

Only slight effort is required. DO NOT force. The fill coupler may be damaged if too much force is applied.

7. The Portable and the Base Unit are now fully coupled.
8. Refer to "Filling the Portable"

NOTE: The following Portable units can be filled from an Penox Base Unit. All that is needed is the appropriate Base Unit coupler for Portable compatibility.

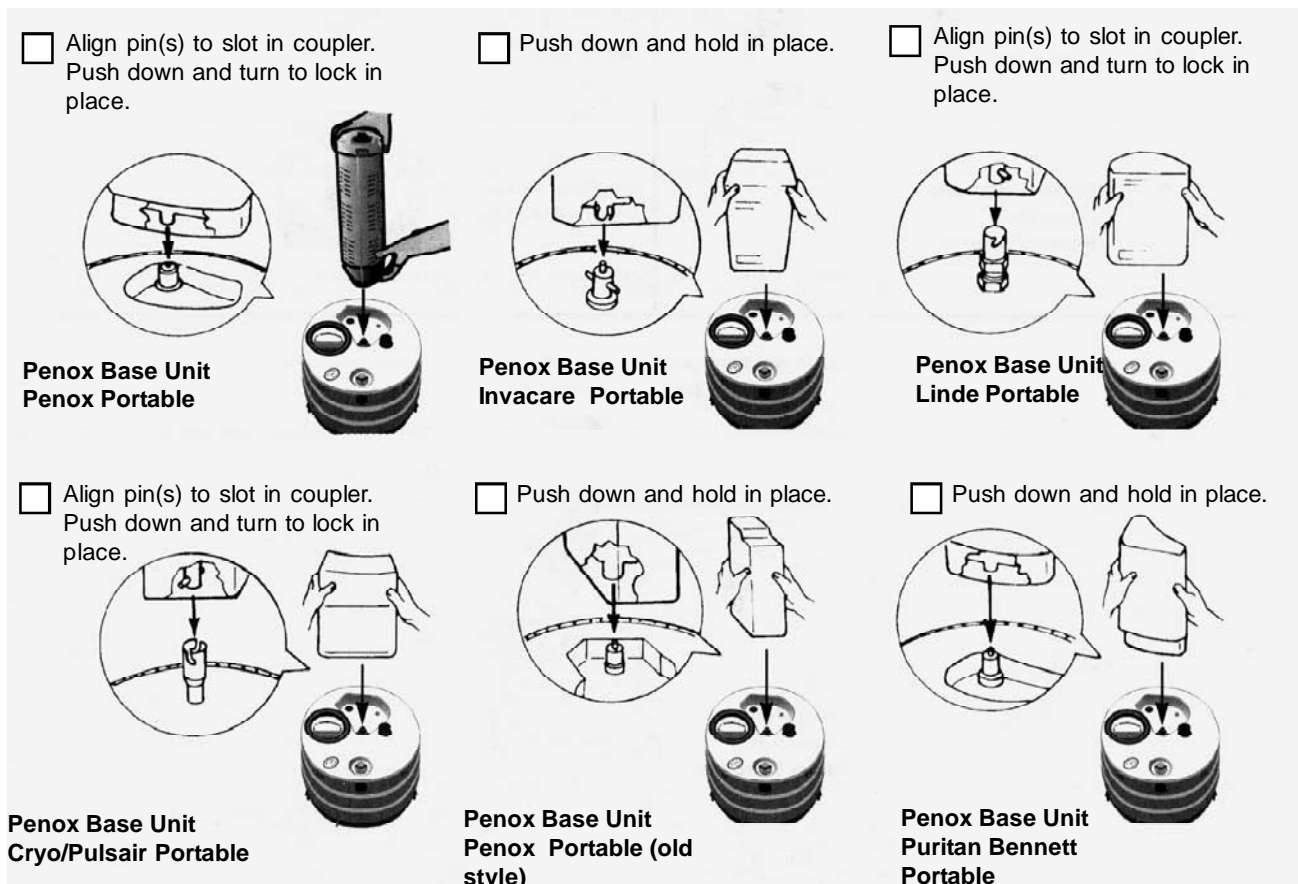


FIGURE 3 - CONNECTING THE PORTABLE TO THE BASE UNIT

ATTACHING AN PENOX PORTABLE TO DIFFERENT BASE UNITS - TOP FILL MODELS (FIGURE 4)

WARNING

Stay with the units until the fill is completed so that immediate action can be taken if a problem should occur.

NOTE: The Penox Portable unit can be filled from the following Base Units. All that is needed is the appropriate Portable coupler for Base Unit compatibility.

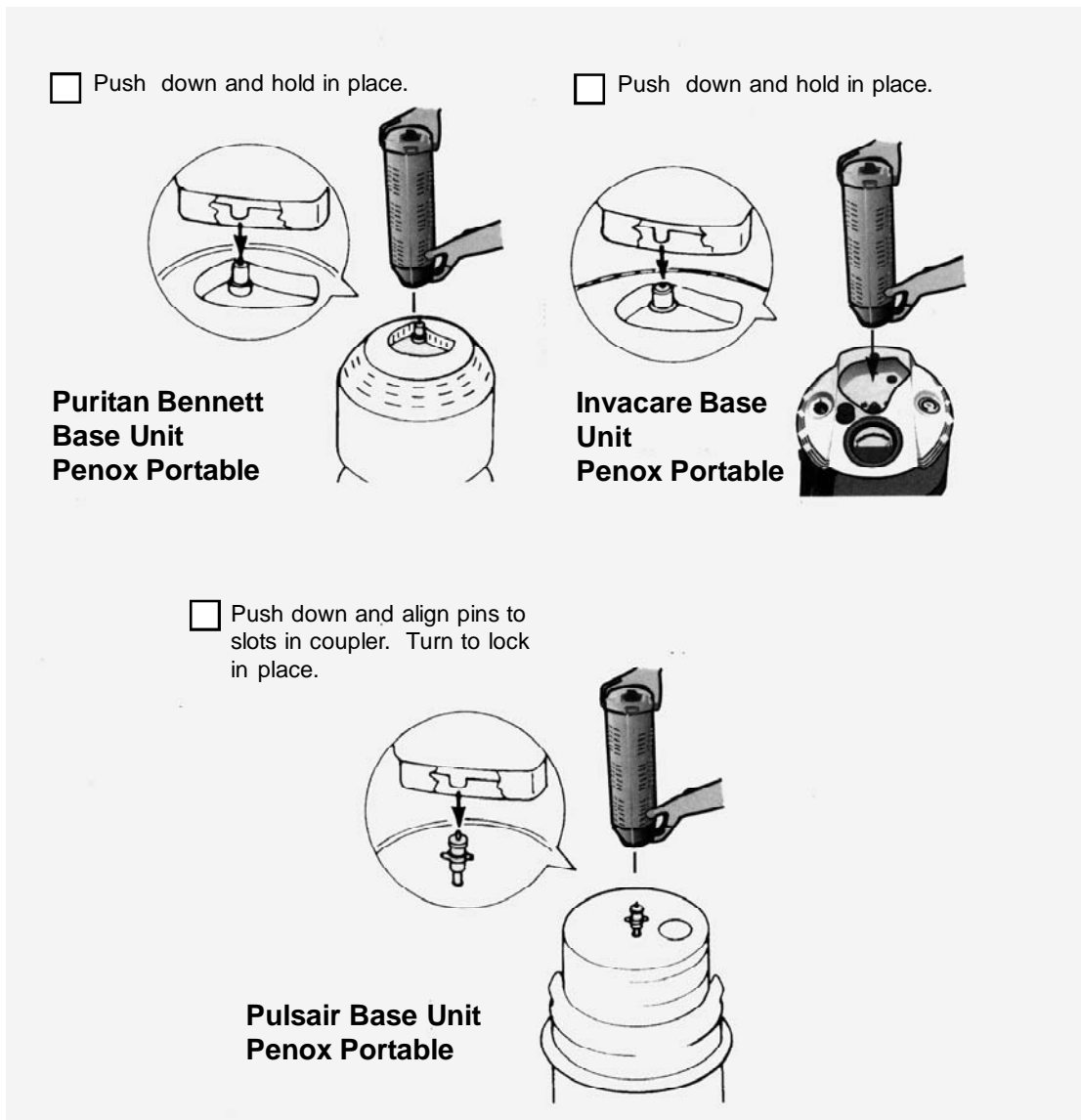


FIGURE 4 - CONNECTING THE PORTABLE TO THE BASE UNIT

The Portable is filled from the Base Unit as follows:

NOTE: The fill connectors must be clean and dry in order to avoid malfunctions due to freezing. Contamination may cause the couplings to seize and cause difficulty in separating the Portable from the Base Unit. Refer to the troubleshooting section in the Base Unit section of this manual.

1. Check the Oxygen Contents Gauge to be sure that the Base Unit has an ample supply of liquid for filling purposes. The Base Unit should NOT indicate that the Base Unit needs to be filled soon. (Indicator needle of the Oxygen Contents Gauge is in the yellow area).
2. Remove the protective cover on the Base Unit fill coupler.
3. Turn the Portable flow rate selector to zero (OFF).
4. Check the fill couplers on the bottom of the Portable and top of the Base Unit for presence of moisture. If moisture exists, wipe the coupler with a clean, dry, lint-free cloth.
5. Hold the Portable in upright position with both hands, align the couplers and lower the Portable into position so that the Base Unit portion of the coupler enters the Portable connector (FIGURE 3).
6. Push down on the Portable slightly.

WARNING

Only slight effort is required. DO NOT force. The fill coupler may be damaged if too much force is applied.

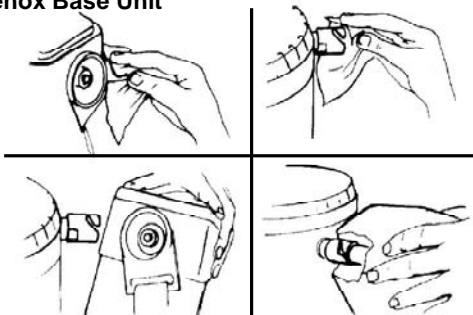
7. The Portable and the Base Unit are now fully coupled.
8. Refer to "Filling the Portable".

ATTACHING THE SIDE FILL PORTABLE TO THE SIDE FILL BASE UNITS - (FIGURE 5)

WARNING

Stay with the units until the fill is completed so that immediate action can be taken if a problem should occur.

**Cryo Associates Portable
to Penox Base Unit**



**Penox Side-fill Portable to
Cryo Associates Base Unit**



FIGURE 5 - SIDE FILL COUPLER

1. Clean the fill couplers of the Portable and Base Unit.
2. Rotate to align fill coupler pin of the Portable with the fill coupler slot on the Base Unit.
3. Insert Portable fill coupler into Base Unit and rotate Portable approximately 30° until Portable is locked into place and vertical.

CAUTION

DO NOT use excessive force when locking Portable into Base Unit. It is NOT necessary to push the Portable into the Base Unit after it has been locked into place.

4. Refer to “Filling the Portable” in this section of the manual.

FILLING THE PORTABLE (FIGURE 6)

NOTE: During the fill process, one (1) hand should maintain a gentle downward pressure over the top of the Portable unit (top-fill only).

1. Begin filling the Portable unit by opening the Vent-to-Fill valve by pulling up on the Vent-to-Fill lever and turn the flow selector to any ON position.

NOTE: You should hear a hissing sound.

NOTE: Approximately every 30 seconds rapidly lower and lift the vent-to-fill lever OFF and ON a couple of times. This helps prevent ice from forming in the valve.

NOTE: The fill process will take between 3/4 and 1-3/4 minutes to complete. (Fill times will vary between warm and cold units.) (Allow additional time for Linde. This extra time is required to achieve the higher saturation pressure.)



FIGURE 6 - FILLING THE PORTABLE

2. You can tell that the Portable unit is full when:
 - a. The hissing sound changes in tone.
 - b. Liquid Oxygen will start to vent through the vent tube on the bottom of the Portable unit.

3. Close the vent-to-fill valve lever for 10 seconds, then turn the flow selector to the ZERO (OFF) position.
4. TO GET MAXIMUM FILL:
 - a. Open the vent-to-fill lever until liquid vents (refer to Step 2)
 - b. Leave the Portable unit in place for 10 seconds after the Portable is filled.

NOTE: This procedure can be repeated several times to get the maximum amount of liquid oxygen into the Portable unit.

5. After completing Step 4 wait 15 seconds, slowly lift the Portable unit from the Base Unit. DO NOT FORCE. If the units will not release, wait 2-5 minutes for the units to warm up. Then they will separate easily.

NOTE: Should liquid oxygen leakage occur when the Portable is disengaged, re-engage the Portable unit several times. This will dislodge any ice or other obstructions.

WARNING

Should leakage be extreme to the point of a continuous stream of liquid oxygen, re-engage the Portable unit, ventilate the area and leave. CALL YOUR OXYGEN SUPPLIER IMMEDIATELY.

Contact with liquid oxygen will cause frostbite.

Oxygen does not burn. However, it will accelerate burning of flammable materials.

NOTE: This will provide approximately 7 hours of usage at 2 liters per minute.

6. Check the liquid content of the Portable by lifting the Portable by the strap directly above the Contents Gauge as shown in FIGURE 2, and read the color coded bar which indicates the amount of oxygen available for use. Always ensure that there is an adequate supply of oxygen available to last the amount of time away from the Base Unit.
7. Reattach the dust cap to the Base Unit, if provided.

BREATHING FROM THE PORTABLE

The Oxygen Contents Gauge reveals the contents of the unit. The gauge will indicate the amount of oxygen in the Portable. The full green band indicates full; the full green band down to the yellow band indicates partially full; the yellow band indicates caution, the unit is nearing empty; and the red band indicates empty.

1. Check the Oxygen Contents Gauge to verify adequate oxygen supply.
2. Connect cannula/oxygen mask to the oxygen outlet fitting.
3. Turn the flow control knob clockwise to the prescribed rate.
4. Adjust the cannula/oxygen mask to the face to receive oxygen comfortably.

WARNING

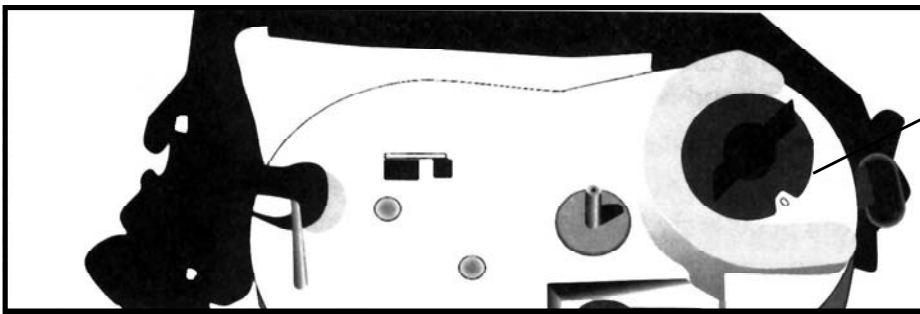
DO NOT select a different setting unless your physician has prescribed a change. The oxygen setting **MUST** be set to the exact flowrate. The oxygen will **NOT** flow if the knob is between settings.

Always turn the knob to ZERO (OFF) when not in use.

5. If using a cannula/oxygen mask, check that all the fittings are tight and adjust the cannula/oxygen mask to the face and breathe normally.
6. The Oxygen Contents Gauge will show how much liquid is remaining. It should be checked periodically to ensure that the supply is adequate.

WARNING

The flow control knob **MUST** be set to the prescribed setting and the detent felt to receive the prescribed flowrate of oxygen. If this does not occur **CALL YOUR OXYGEN SUPPLIER IMMEDIATELY.**



Variable Flow Rate Selector
(Turn knob to desired flow rate)

FIGURE 7 - VARIABLE FLOW RATE SELECTOR (PORTABLE)

CARRYING STRAP

The carrying strap allows the Portable to be transported comfortably when in use. Simply adjust the strap buckle for your particular height and position the strap on the shoulder (FIGURE 8). The Penox Portables are fashioned to set comfortably at your side when using the carrying strap. The Portable should be worn with the strap across the shoulder and adjusted to permit finger tips to support the bottom of the Portable.

It can also be transformed into a convenient carrying handle by connecting the clips located on the lower portion of the strap and carried by hand. (FIGURE 9).



FIGURE 8 - ADJUSTING BUCKLE



FIGURE 9 - CONNECTING CLIPS

MAINTENANCE

CLEANING THE LIQUID OXYGEN BASE UNIT / PORTABLE

CAUTION

Never apply waxes, polishes, or other similar compounds on any surface of the Penox 30/40 Base Unit or Penox Continuous Portables as these compounds may be flammable.

SHROUD (BASE UNIT)

CAUTION

DO NOT remove shroud.

1. Remove dirt and dust from Base Unit and Portable with a mild, household cleaner and abrasive cloth or sponge.
2. Dry the shroud/stainless steel container and Portable with a dry, lint-free cloth.

HUMIDIFIER

NOTE: To clean the oxygen humidifier, follow the instruction provided by the manufacturer. If none are provided, follow these steps.

1. Clean the humidifier every day.
2. Wash it in soapy water.
3. Rinse it with a solution of 10 parts of water, one (1) part vinegar.
4. Rinse again with hot water and refill with distilled water to the level shown on the humidifier.

WARNING

DO NOT overfill.

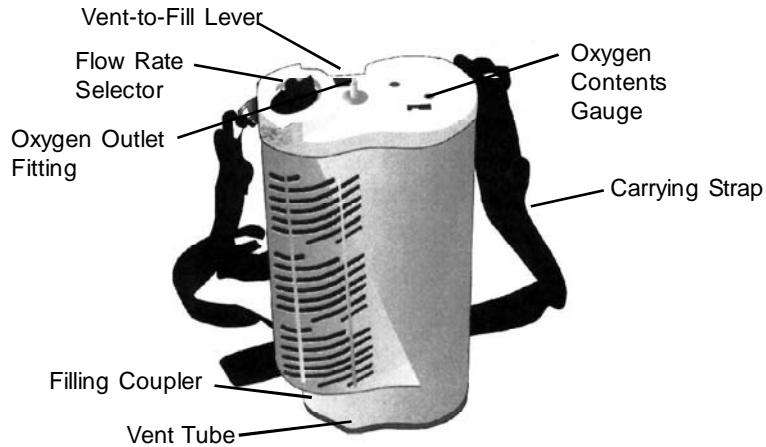
USAGE TIMES

Use times state in the table are only approximate. Variables such as level of filling, idle time since filling and flow rate setting will affect duration of performance. As you develop your own time of use, you will be able to predict times with reasonable accuracy.

FLOW RATE (LPM / HR)	PENOX 1 PORTABLE (HOURS OF USAGE)
.25	*38.5
.5	28.0
.75	18.7
1.0	14.0
1.5	9.3
2.0	7.0
2.5	5.6
3.0	4.7
4.0	3.5
5.0	2.8
6.0	2.3
7.0	2.0
8.0	1.8
10.0	1.4
12.0	1.2
15.0	.9

*Use Times at Low Flow Rates is exceeded by N.E.R.

TROUBLE SHOOTING



Portable Only		
Problem	Possible Cause	Solutions
Portable will not fill.	Base Unit Empty Portable vent-to-fill valve not open.	Call your Dealer or Service Representative immediately. Open vent-to-fill lever.
Base Unit/Portable freeze together during fill.	Overfilling of Portable. Defective body seal in Base Unit filling-coupler. Moisture or foreign matter on filling-couplers (Base Unit/Portable).	Cold: 45-55 seconds fill time Warm: 55-95 seconds fill time Call your Dealer or Service Representative immediately. Close vent-to-fill lever and wait for couplers to thaw (15-20 minutes). To prevent freezing, check filling couplers before each fill and clean, if necessary.
One or both of the filling couplers on Base Unit and/or Portable freeze open following a fill.	Moisture or foreign matter on filling couplers prior to fill.	Re-engage the Portable unit several times. This will dislodge any ice or other obstruction.

TROUBLE SHOOTING (cont.)

Portable Only

Problem	Possible Cause	Solutions
The primary relief valve (not accessible) vents excessively (continuous hissing sound)	Primary relief valve did not seat properly after filling procedures.	Re-engage the Portable. Leave vent-to-fill valve closed. This will open the primary relief and allow flow to clear seat. If condition persists, call your Dealer or Service Representative immediately.
No Flow.	Unit empty. No pressure. Flow Selector in ZERO (OFF) position. Problem internally	Refill. Allow unit to stabilize. If leaks are present, call Dealer immediately. Turn to prescribed flow rate. Call Dealer or Service Representative immediately.
Portable did not fill properly.	The vent-to-fill lever/valve was not closed early enough near the termination of the fill process. The vent-to-fill valve is improperly seated.	Reconnect the Portable unit to the Base Unit with the Portable vent-to-fill lever/valve closed until the primary relief valve on the Portable vents (hissing sound) for approximately five (5) seconds. Jostle the vent-to-fill lever back and forth rapidly to seat the valve.
Oxygen Contents Gauge: Erroneous gauge reading.	Gauge malfunction.	Call your Dealer or Service Representative immediately.

ACCESSORIES

BASE UNIT ROLLER BASE (OPTIONAL)

A durable roller base that permits ease of transport of the unit from one area to another.

LIMITED WARRANTY

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO ALL PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser/user of our products.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Penox warrants its product to be free from defects in materials and workmanship for a period of one (1) year; five (5) years for the Base Unit and portable vacuums from date of purchase. If within such warranty period any such product shall be proven to be defective, such product shall be repaired or replaced, at Penox's option. This warranty does not include any labor or shipping charges incurred in replacement, part installation, or repair of any such product. Penox's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Penox product. In the event you, do not receive satisfactory warranty service, please write directly to Penox at the address on the back cover, provide the dealer's name, address, and the date of purchase, indicate the nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

Limitations and Exclusions: The forgoing warranty shall not apply to serial numbered products if the serial number has been removed or defaced, products subjected to negligence, accident, improper operation, maintenance or storage, products modified without Penox's express written consent (including, but not limited to, modification through the use of unauthorized parts or attachments; products damaged by reason of repairs made to any component without the specific consent of Penox, or to a product damaged by circumstances beyond Penox's control, and such evaluation will be solely determined by Penox. The warranty shall not apply to problems arising from normal wear or failure to adhere to the following instructions.

The forgoing warranty is exclusive and in lieu of all other express warranties. Implied warranties, if any, including implied warranties of merchantability and fitness for a particular purpose, shall not extend beyond the duration of the expressed warranty provided herein and the remedy for violations of any implied warranty shall be limited to repair or replacement of the defective product pursuant to the terms contained herein. Penox shall not be liable for any consequential or incidental damages whatsoever.

This warranty shall be extended to comply with state/provincial laws and requirements.



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