
SmartDose™

Liquid Oxygen Portables

301P and 601P Product Manual

CAUTION

Federal (USA) law restricts this device to sale by or on the order of a physician.



Inspired technologies

Bringing breath to life.

Welcome!

Thank you for choosing the SmartDose Liquid Oxygen Portable from Inspired Technologies.

The SmartDose Liquid Oxygen Portable gives you the freedom and confidence to live a more active life.

The SmartDose Liquid Oxygen Portable is the only portable that senses your respiratory rate and automatically delivers more oxygen when you need it most to help you stay active and saturated.

Before You Begin

Please read this entire manual before you use your SmartDose Liquid Oxygen Portable. If you do not understand the warnings, cautions, and instructions, contact your medical equipment provider before using this equipment. Otherwise, there is a risk of injury to you or damage to the equipment.

When using oxygen products, especially when children are present, you must follow several important safety precautions. Please read the following safety information before you use your SmartDose Liquid Oxygen Portable.

Product Classification

The SmartDose Liquid Oxygen Portable is classified as:



IEC Class II equipment



Type B Applied Part

Not suitable for use in the presence of a flammable anesthetic mixture with air, or with nitrous oxide.

Terms, Abbreviations, and Symbols

This guide and the SmartDose Liquid Oxygen Portable product labeling uses the following terms, abbreviations, and symbols:

IEC Symbols



Smoking is not allowed in the area

REF

Indicates a Model Number



General warning sign

SN

Indicates a Serial Number



Class II Equipment

LOX

Indicates Liquid Oxygen



Type B Equipment



Follow Operating Instructions



Warning: dangerous voltage



Fire Hazard

Important Safeguards

When using oxygen products, especially when children are present, basic safety precautions should always be followed. Read all instructions before using. Important information is highlighted by these terms:

DANGER

Urgent safety information for hazards that will cause serious injury or death.

CAUTION

Information for preventing damage to the product.

WARNING

Important safety information for hazards that might cause serious injury.

NOTE

Information to which you should pay special attention.

Important safeguards are indicated throughout this guide; pay special attention to all safety information.

Read all instructions before using.
Save these instructions.

General Dangers and Warnings

In order to ensure the safe operation of the SmartDose Liquid Oxygen Portable, these instructions **MUST** be followed.

Dangers

DANGER

Fire hazard. Do not lubricate.

Do not allow grease or oil from your hands or other source to come into contact with the internal tubing of the SmartDose Liquid Oxygen Portable. These solutions may be flammable and cause injury.

DANGER

Oxygen causes rapid burning. Do not smoke in the vicinity of your SmartDose Liquid Oxygen Portable or when you are near a person utilizing oxygen therapy. Keep the SmartDose Liquid Oxygen Portable at least 5 feet (1.6M) from hot, sparking objects or open sources of flame.

Warnings

WARNING

Read instruction manual first. Do not operate this equipment without first reading and understanding this instruction manual and the warning labels on the product. If you do not understand the warnings, cautions and instructions, contact your medical equipment provider or technical personnel before attempting to install or use this equipment; otherwise, injury or damage may occur.

WARNING

Patient use only. The use of this device is limited to an oxygen patient. Liquid oxygen **MUST** be used **ONLY** by an oxygen patient and is not intended to be distributed to any other individual for any purpose.

WARNING

Use only authorized parts. Do not use parts, accessories, or adapters other than those authorized by Inspired Technologies, Inc.

WARNING

Do not use if..



Do not use the SmartDose Liquid Oxygen Portable if it:

- Is not working properly.
- Has been dropped or damaged.
- Has been submersed in water.

Call a qualified technician for examination and repair.

WARNING

Unintended oxygen leakage. If any unintended leakage of oxygen is detected, do not attempt to use the product. Turn the product off. If leakage persists, place the product outdoors and notify your medical equipment provider or service representative of this condition.

**WARNING**

Over pressure relief valve. The SmartDose Liquid Oxygen Portable is equipped with a pressure relief valve to ensure the user's safety. When activated, this safety feature may make a slight hissing noise. If this noise occurs and persists, turn the unit off and contact your medical equipment provider or service representative.

**WARNING**

Always supervise children. Children should always be supervised around the SmartDose Liquid Oxygen Portable. Failure to do so may result in damage to the unit or personal injury.

**WARNING**

Use in accordance with your prescription. For your safety, the SmartDose Liquid Oxygen Portable must be used in accordance with the prescription determined by your physician.

**WARNING**

Not for use in emergency transport vehicles. The SmartDose Liquid Oxygen Portable is not intended to be used in emergency transport vehicles (ambulances or helicopters), or other similar areas where high levels of Electromagnetic Interference (EMI) may be expected.



Warnings About Handling

WARNING



Use extreme care when filling.

Use extreme care when filling your SmartDose Liquid Oxygen Portable.

WARNING



Keep unit in an upright position. Always ensure that the portable is

in an upright position. Turning the portable on its side will cause venting of oxygen from the relief valve. It is normal to hear a loud noise when a full unit is moved into a horizontal position. The noise is excess gas pressure escaping from the relief valve.

Cautions and Notes

CAUTION



Do not disassemble. The SmartDose Liquid Oxygen Portable contains no user serviceable parts.

If service is required, contact your home medical equipment provider or authorized service center.

CAUTION



Use only AA type batteries. AA alkaline or AA rechargeable batteries may be used. If using Rechargeable batteries, they must be fully charged before installing. It is recommended to use ≥ 1800 mAh Ni-MH (Nickel Metal Hydride) batteries. All 4 batteries must be of the same type capacity. Do NOT mix battery types.

CAUTION



Federal law restricts this device to sale by or on the order of a physician.

CAUTION



Portable and mobile RF (Radio Frequency) communications equipment can affect the SmartDose Liquid Oxygen Portable.

NOTE



Have a full cylinder of oxygen on hand. Inspired Technologies recommends the medical equipment provider leave a full cylinder of oxygen with the patient after setting up the SmartDose Liquid Oxygen Portable, and instructing the patient to always keep a full cylinder on hand.

NOTE



Allow portable to stabilize after filling. After filling the SmartDose Liquid Oxygen Portable, Inspired Technologies recommends waiting at least 5 to 10 minutes before using it. This allows the liquid oxygen to stabilize within the portable and better maintain the prescription flow setting.

NOTE



Continuous Flow may be less than prescribed dose.

Indications for Use

The SmartDose Liquid Oxygen Portable 301P and/or 601P provides a source of supplemental oxygen for ambulatory home healthcare patients, by vaporizing medical grade liquid oxygen and then dispensing it to the patient via an integral electronic conserving device. The SmartDose Liquid Oxygen Portable 301P and/or 601P is neither a life-sustaining nor a life-supporting device.

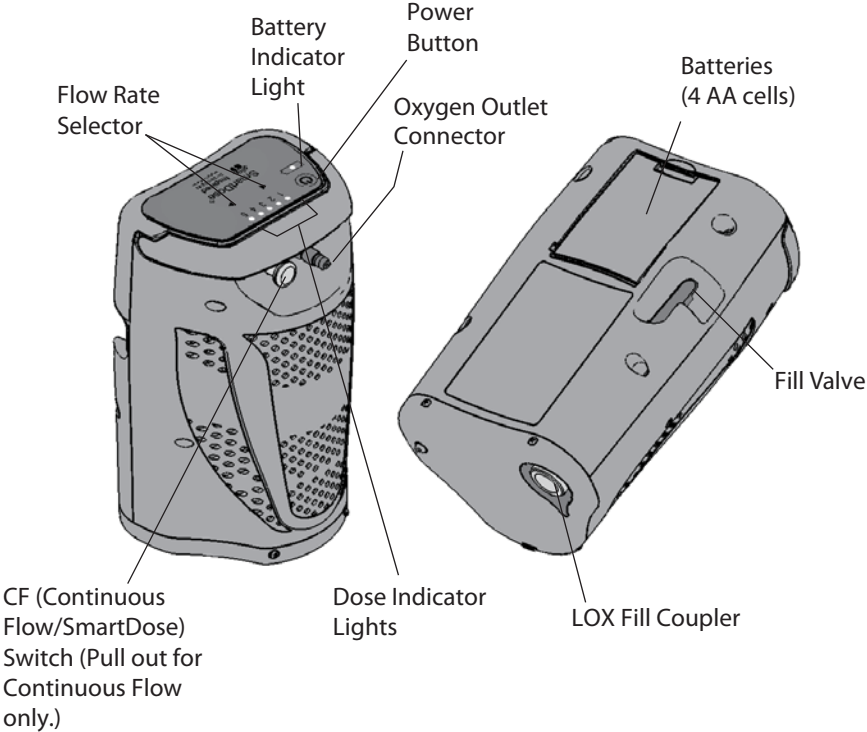
Provider Checklist

Before leaving the SmartDose Liquid Oxygen Portable with a patient, the following checklist MUST be completed:

- Check all parts for shipping damage. In case of damage, do not use. Contact Inspired Technologies, Inc. for further instructions.
- Make sure the SmartDose Liquid Oxygen Portable is compatible with the liquid oxygen source. Be sure to use a liquid oxygen reservoir with a compatible 99% coupler.
- Instruct the patient on the safe operation of the SmartDose Liquid Oxygen Portable and all associated accessories, and review ALL warnings.
- Leave a copy of this product manual with the patient.

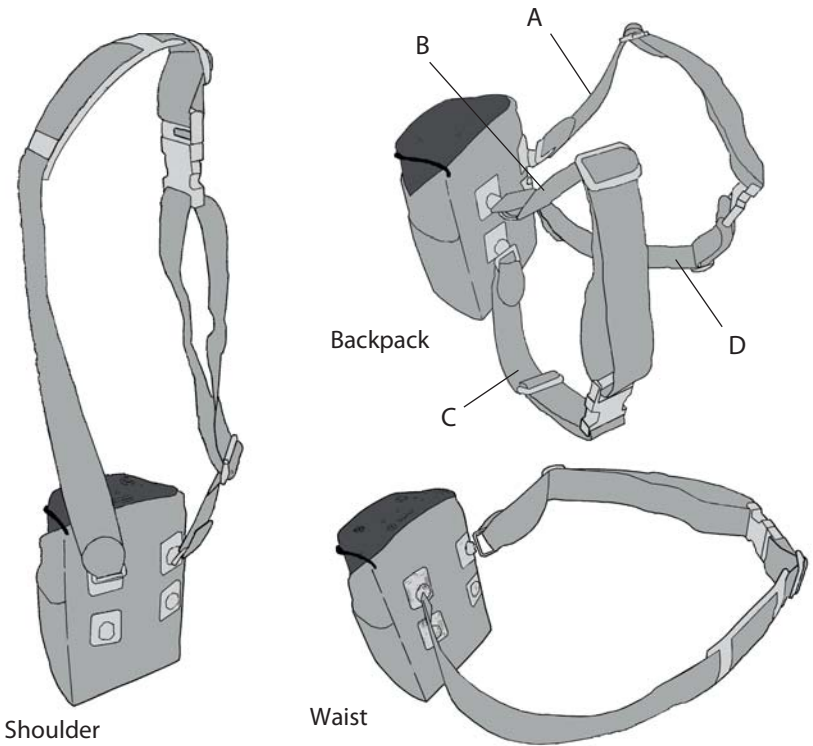
SmartDose Liquid Oxygen Portable Overview

The illustrations show the parts of the SmartDose Liquid Oxygen Portable.

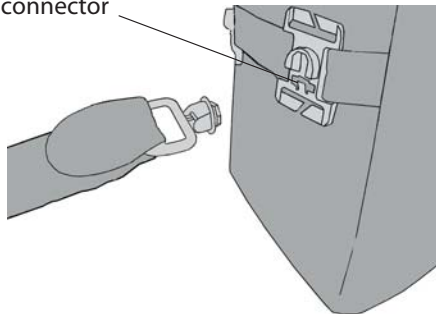


Carrying Options

The illustrations show the recommended configurations for carrying the SmartDose Liquid Oxygen Portable. Included Straps C & D can be interchanged to adjust lengths.



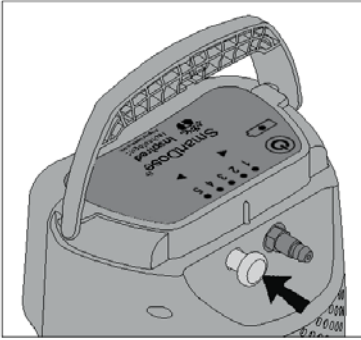
Tab must be depressed to release connector



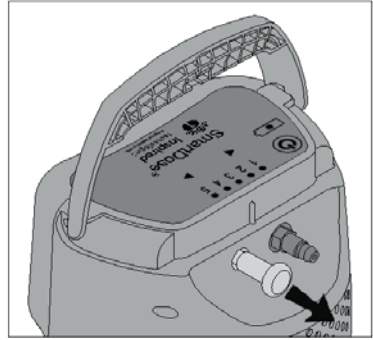
SmartDose Liquid Oxygen Portable Delivery Modes

The SmartDose Liquid Oxygen Portable has two modes: SmartDose and Continuous Flow. To receive the benefits of SmartDose technology, set your SmartDose Liquid Oxygen Portable to SmartDose mode. Continuous Flow mode is offered as a backup option in case your batteries run out of power. Continuous Flow mode provides a steady flow of oxygen until you can replace the batteries; it does not offer the benefits of SmartDose technology. Also, be aware that your portables oxygen supply will be depleted rapidly when set to operate in Continuous Flow mode.

SmartDose mode
CF switch pushed in



Continuous Flow mode
CF switch pulled out



With the Portable in SmartDose mode, SmartDose technology detects changes in your breath rate and automatically adjusts the oxygen dose using a unique valving system. In this way, the SmartDose Liquid Oxygen Portable automatically adapts the oxygen flow to meet your needs as your activity level goes up and down throughout the day. After you have set the flow rate to your prescribed dose, there is no need to manually change the oxygen flow rate during the day—SmartDose technology does it for you.

SmartDose technology helps you in two ways: when you are active, a higher oxygen dose helps reduce feelings of breathlessness and stay active. When you are at rest and your breathing rate slows down, SmartDose technology adjusts the oxygen dose to the lower level that meets your needs. Keeping the oxygen flow rate as low as possible helps to extend oxygen duration, minimize nasal dryness, and provide quieter therapy.

Charging the NiMH Rechargeable Batteries

NOTE

Batteries must be charged prior to first use.



NOTE

Do not try to charge Alkaline (non-rechargeable) batteries. Damage to the battery, battery charger or personal injury may result.



Only charge batteries supplied with Inspired Technologies products.

CAUTION

Use only AA type batteries. AA alkaline or AA rechargeable batteries may be used. If using Rechargeable batteries, they must be fully charged before installing. It is recommended to use ≥ 1800 mAh Ni-MH (Nickel Metal Hydride) batteries. All 4 batteries must be of the same type capacity. Do NOT mix battery types.

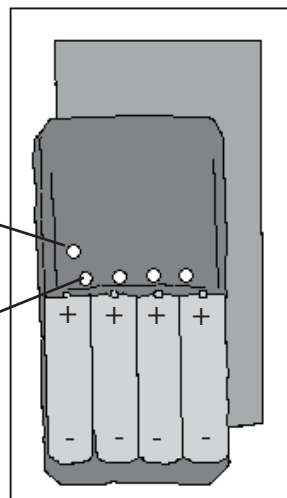


Battery Charger Operation:

- Place batteries in battery charger in proper orientation. The plus (+) side should be near the LED.
- Plug charger into a standard 120 VAC outlet.
- Power LED should come on and stay on as long as there is power to the charger.
- Charge LED's are on (red) when the batteries are charging.
- Charge LED's are out when charge is complete.

Power LED is on when power is applied to the charger

Charge LED's go out when charging is complete



Filling a SmartDose Liquid Oxygen Portable

The SmartDose Liquid Oxygen Portable has a 99% oxygen (blue) coupler that lets you fill a SmartDose Liquid Oxygen Portable from a Puritan Bennett or Caire liquid oxygen (LOX) reservoir.

To fill your SmartDose Liquid Oxygen Portable, follow the instructions in the manual for your oxygen source, and note all applicable warnings and cautions. All terms, abbreviations and symbols, safeguards, cautions, warnings, notes, and Indications for use within this manual still apply.

Please note, the Fill Valve must be held open during the fill process as shown below:

Step 1

Fully press Portable onto reservoir coupler.

Step 2

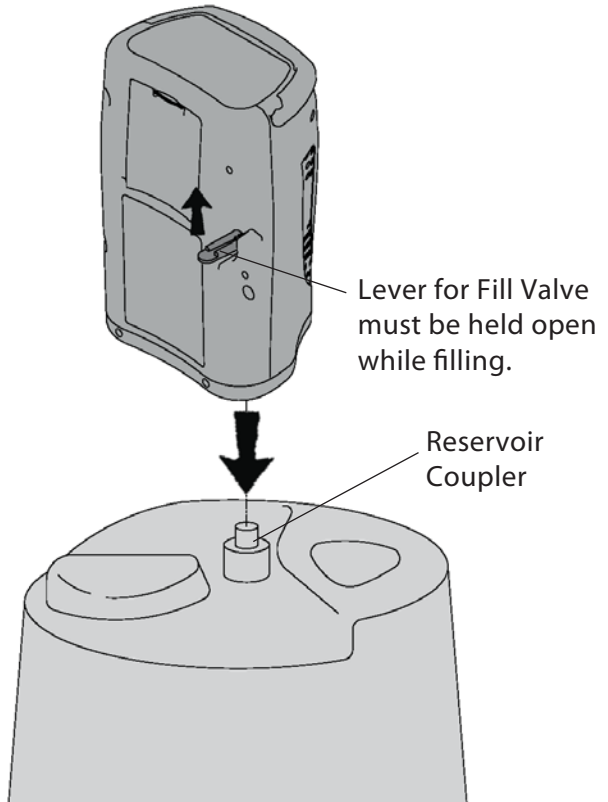
While maintaining downward pressure, open the fill valve.

Step 3

Fill until “sputtering” sound occurs which typically indicates the portable is full.

Step 4

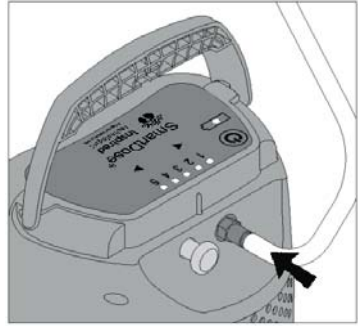
Close the fill valve and remove the Portable from the reservoir.



Starting Oxygen Delivery from the SmartDose Liquid Oxygen Portable

To receive oxygen from your SmartDose Liquid Oxygen Portable, follow these steps.

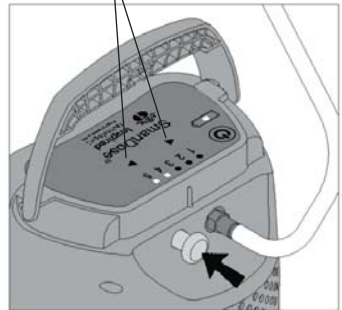
- 1 Push the cannula breathing tube firmly onto the oxygen outlet port. Adjust the cannula breathing tube to the proper position on your nose so that you will be able to breathe the oxygen comfortably.



- 2 Turn on the SmartDose Liquid Oxygen Portable by pressing and holding the PowerButton until all of the numerical LEDs (1 through 5) light up.

- 3 Using the Flow Rate Selector Buttons (Arrows), increment to your prescribed setting (1 to 5). Be sure that the CF (Continuous Flow/SmartDose) switch is pushed in as shown, confirming that your SmartDose Liquid Oxygen Portable is in SmartDose mode.

Flow Rate
Selector Buttons



- 4 Gaseous oxygen is now flowing from your SmartDose Portable, and with each breath you should receive your set dose of oxygen and the set Dose Indicator Light will illuminate with each breath. In order for the SmartDose Portable to determine resting breath rate, the patient must rest 1 - 2 minutes before beginning activity.

- 5 Keep an eye on your SmartDose Liquid Oxygen Portable's battery power.
- The Battery Indicator Light only monitors battery power and does not indicate whether there is liquid oxygen in the reservoir.
 - When the battery indicator lights up red with each breath, it is time to replace the batteries. Typically, the batteries will last eight hours after the first red light appears.
 - The battery indicator will remain lit red (not blinking with each breath) if the batteries are totally depleted.

NOTE

If the batteries are dead and you cannot replace them, switch to Continuous Flow mode by pulling the CF switch out.

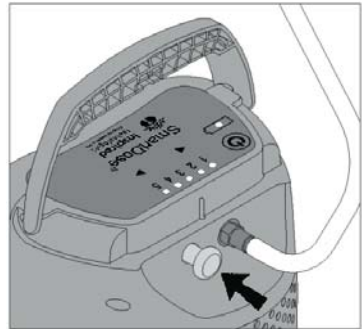
The unit will deliver 2 liters per minute of flow and cannot be adjusted.

Continuous Flow mode does not require batteries.

Leave the Flow Rate Selector at your prescribed dose.

See the "Changing the Batteries" (pg. 15) section in this manual for more information.

- 6 To stop continuous, push the CF switch in and hold the power button until the power is off. The lights will illuminate and count down from 5 - 1 and then shut off.



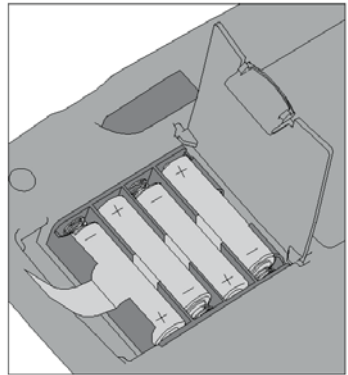
NOTE

If the SmartDose Liquid Oxygen Portable is in Continuous Flow mode, a small amount of oxygen will still be delivered. The portable must be powered off & the CF switch pushed in to completely turn off the flow of oxygen.

Changing the Batteries

When the red battery indicator light begins blinking red, it means the SmartDose Liquid Oxygen Portable's batteries are low and it's time to replace them. A continuous, non-blinking red light means the batteries are dead. Until you can replace the batteries, you should switch the portable to Continuous Flow mode by pulling the CF switch out. Leave the Flow Rate Selector at your prescribed dose. Continuous Flow mode does not require batteries and will deliver a continuous flow of oxygen, but this mode also significantly shortens the oxygen duration of your portable. Follow these steps to replace the batteries.

-
- 1 Open the battery compartment on the back of the portable.



-
- 2 Remove old batteries from the compartment by pulling the ribbon to dislodge each battery. Recharge or properly dispose of batteries.
-
- 3 Place 4 AA Alkaline or rechargeable batteries in the battery compartment matching the designations in the battery holder. Ensure that the ribbon is placed below the batteries to aid in future removal. Confirm that all batteries are oriented properly, with the negative (-) pole touching the springs in the battery compartment.
-

NOTE

If using rechargeable batteries, ensure they are fully charged before installation. Nickel Metal Hydride (Ni-MH) ≥ 1800 mAh rechargeable batteries are recommended.

4

Close the battery compartment lid. Turn unit back on by holding the Power Button. Verify that batteries are installed correctly by pushing the CF switch in and setting the Flow Rate Selector to your prescription setting. The battery indicator light should start to blink red, then green, and the portable can now be used.

WARNING

Using the SmartDose Liquid Oxygen Portable in Continuous Flow mode (CF Switch pulled out) will use oxygen at a faster rate than using it in SmartDose mode. Monitor the contents of your SmartDose Liquid Oxygen Portable as described in "Checking the Level of Liquid Oxygen" so you do not run out of oxygen.

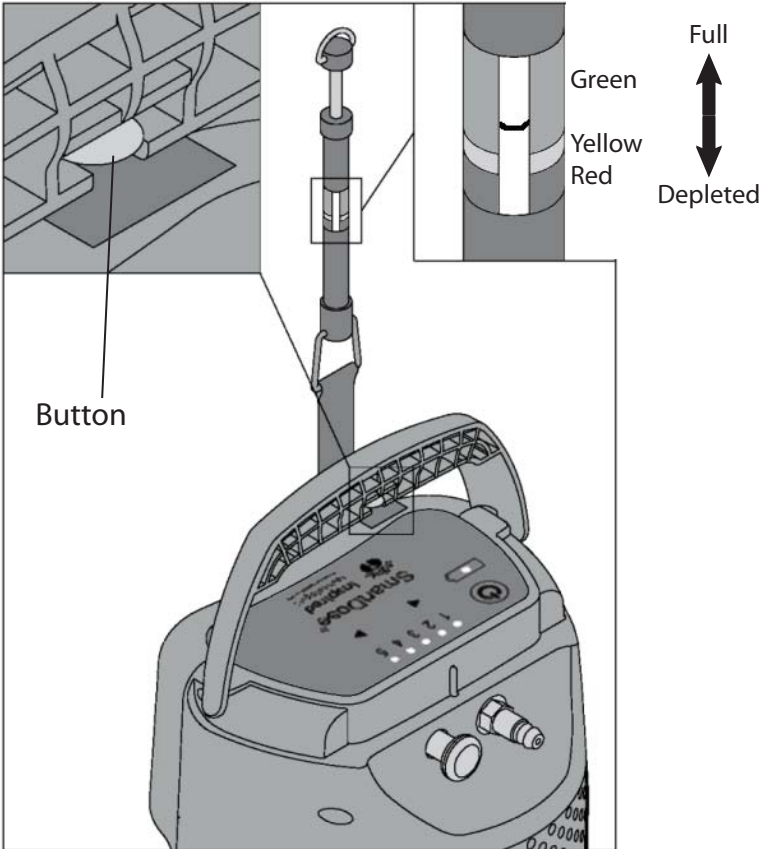
NOTE

When using the SmartDose Liquid Oxygen Portable in Continuous Flow mode, the indicator light will NOT light up green or red with each breath. Turning the Flow Rate Selector all the way down will not completely stop the flow of oxygen. To stop the flow of oxygen push the CF switch in & power off.

Checking the Level of Liquid Oxygen

The SmartDose Liquid Oxygen Portable comes provided with a gage to determine the amount of oxygen contained. Follow these steps for using the contents gage.

- 1 Remove Portable from bag or any other container you might be using. Slide the button on the gage strap into the slot on the Portable handle. Lift the Portable from the top D-ring on the gage to suspend it.
- 2 Let the portable stabilize (do not bounce or shake it) for about 5 seconds. Observe the location of the slider marker in the gage window.



Troubleshooting

The following troubleshooting chart will help you analyze and correct minor system malfunctions. If the suggested procedures do not help, call your medical equipment provider. Do not attempt any other maintenance.

WARNING

To avoid electric shock hazard, do not disassemble the portable case. This should only be done by a qualified technician.

Problem	Solution
No indicator light(s)	<ul style="list-style-type: none">• Check that there are new or fully charged batteries in the unit (four AA batteries).• Check that the cannula tubing is properly connected and that the tube is not blocked.• Check that the CF (Continuous Flow/SmartDose) switch is in the SmartDose position. Refer to the "SmartDose Liquid Oxygen Portable Delivery Modes" (pg. 9) section in this manual for additional information.

Cleaning and Maintenance

Removing Frost

Under certain environmental conditions, frost may form on the vaporizer coil and on the case. As the unit thaws, the possibility exists for melted frost to leak from the bottom of the unit. You can remove it by wiping the case with a cloth. Exercise caution when placing the unit on valuable, water sensitive surfaces.

Preventative Maintenance

Contact your medical equipment provider annually to schedule preventative maintenance for your SmartDose Liquid Oxygen Portable. There are no user-serviceable components inside the portable.

Keep the exterior of the SmartDose Liquid Oxygen Portable clean using a clean, damp, oil-free, lint-free cloth.

Clean and dry the coupler on the SmartDose Liquid Oxygen Portable with a clean, dry, oil-free, lint-free cloth before each portable fill.

Accessories

Inspired Technologies recommends using only cannula specifically intended to be used with oxygen delivery systems.

Cannula should be capable of delivering up to 10 LPM of continuous flow; maximum length that can be used is 7 feet. Contact your medical equipment provider for recommendations and details.

Refer to the cannula manufacturer's instructions for proper cleaning and maintenance procedures.

Transporting and Storing SmartDose Liquid Oxygen Portables

Preparing for Shipping

Prior to shipping the SmartDose Liquid Oxygen Portable, remove the batteries and empty any residual oxygen from the unit.
Allow the portable to rest for at least 8 hours to empty.

Storage

Store the SmartDose Liquid Oxygen Portable in a cool, clean, dry area when not in use. Avoid storing in direct sunlight.

Battery disposal

Dispose of all batteries in accordance with local, state, and federal regulations.

Specifications

Batteries Required	4 AA-Cell	
Oxygen Pressure	22 to 25 psig	
LOX Content Volume	Model 301P	0.33 liters (approx)
	Model 601P	0.6 liters (approx)
Weight (empty)	Model 301P	3.5 lb
	Model 601P	4.5 lb
Temperature	Storage/Transport	-20 to 50°C
	Operating	+ 5 to 40°C
Humidity (non-condensing)	Storage	0 to 95% RH
	Operating	15 to 95% RH

Appendix

Oxygen Duration of Portable

The SmartDose Liquid Oxygen Portable comes in two sizes. The table shows approximately how long liquid oxygen lasts at different settings for each model.

Flow	Setting	Approximate Hours of use
SmartDose Liquid Oxygen Portable 301P with SmartDose technology*	1	13.2
	2	7.6
	3	5.4
	4	4.1
	5	3.4
SmartDose Liquid Oxygen Portable 601P with SmartDose technology*	1	24.4
	2	14.1
	3	9.9
	4	7.6
	5	6.2

* These durations are based on the SmartDose Liquid Oxygen Portable being set in SmartDose mode, settings at a nominal 20 BPM. For more information, refer to the “SmartDose Liquid Oxygen Portable Delivery Modes” section in this manual.



Inspired
technologies

Bringing breath to life.

1061 Main Street #24

North Huntingdon, PA 15642

office 724.861.5510

fax 724.861.5530

www.inspiredtechnologiesinc.com

© 2009 Inspired Technologies, Inc.

SmartDose technology

patent pending.

SmartDose is a trademark

of Inspired Technologies, Inc.

LT00-0008 Rev. 1