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\* VIAspire Liquefier, SmartDose technology, patent pending.  
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300D-LT01 Rev 1

# VIAspire™ Liquefier

## Product Manual

### CAUTION

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



*Bringing breath to life.*

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## Welcome!

Welcome to the VIAspire™ Personal Oxygen System from Inspired Technologies. The VIAspire™ Liquefier creates a steady supply of liquid oxygen in your home, making deliveries of oxygen to your home no longer necessary. By docking the VIAspire™ Oxygen Portables, you can fill and transport your liquid oxygen quickly and easily, letting you use the portable for your daily oxygen needs. You no longer need to run oxygen tubing through your house, and you are free to go wherever your day may take you.

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## Before You Begin

Please read this entire manual before you use your VIAspire Liquefier. If you are unable to understand the warnings, cautions, and instructions, contact your medical equipment provider before using this equipment. Otherwise, injury or damage to the equipment may occur.

When using electrical and oxygen products, especially when children are present, you must follow some important safety precautions. Please read the following before you start using your VIAspire Liquefier.

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## Product Classification

The VIAspire Liquefier is classified as:



Type B Applied Part









**IPX1** IPX1 Drip Proof

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 VIAspire Liquefier product labeling uses the following terms, abbreviations, and symbols:

### IEC Symbols

|  |                                    |   |                           |   |                               |
|--|------------------------------------|---|---------------------------|---|-------------------------------|
|  | Smoking is not allowed in the area |  | Fire Hazard               | <b>LOX</b>  | Indicates Liquid Oxygen       |
|  | General warning sign               | <b>IPX1</b>   | Drip Proof Equipment      |   | Indicates On (Power)          |
|  | Class II Equipment                 |  | Indicates On/Standby      | ○   | Indicates Off (Power)         |
|  | Type B Equipment                   | <b>REF</b>  | Indicates a Model Number  |  | Follow Operating Instructions |
|  | Warning: dangerous voltage         | <b>SN</b>   | Indicates a Serial Number |   |                               |

### Important Safeguards

When using electrical 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:

|                |  |                |  |
|----------------|--|----------------|--|
| <b>DANGER</b>  | Urgent safety information for hazards that will cause serious injury or death. | <b>CAUTION</b> | Information for preventing damage to the product.      |
| <b>WARNING</b> | Important safety information for hazards that might cause serious injury.      | <b>NOTE</b>    | 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 installation, assembly, and operation of the VIAspire Liquefier, these instructions **MUST** be followed.



### Dangers

**DANGER**   **Electric shock hazard.** Do not disassemble. The VIAspire Liquefier contains no user serviceable parts. If service is required, contact your home medical equipment provider or authorized service center.



**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 Liquid Oxygen Portable. These solutions may be flammable and cause injury.


**DANGER**  **Allow proper airflow.** Keep the VIAspire Liquefier at least 6 inches (16 cm) from walls, draperies, or any other object that might prevent the proper flow of air in and out of your VIAspire Liquefier. The product should be located so as to avoid pollutants or fumes.


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


**DANGER**   **Do not lay the cannula down.** Do not lay the cannula down while the oxygen is flowing. High concentrations of oxygen can cause rapid burning.


## Warnings

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

**WARNING**  **Liquid Oxygen used ONLY by patient.** 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**  **Keep air openings clear.** NEVER block the air openings of the VIAspire Liquefier or place it on a soft surface, such as foam or a blanket, where the air openings may be blocked. Keep the openings free from lint, hair, and other materials that can block air flow.


**WARNING**  **Do not use if...**  
Do not use the VIAspire Liquefier if it:


- Has a damaged cord or plug.
- 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 leakage of oxygen is detected, do not attempt to use the VIAspire Liquefier. Turn the unit off. If leakage persists, place the unit outdoors and notify your medical equipment provider or service representative of this condition.


**WARNING**  **High Pressure Relief Valves.** The VIAspire Liquefier is equipped with several High Pressure Relief Valves to ensure the user's safety. When activated, this safety feature will make a loud noise. If this noise occurs and persists, turn the unit off and contact your medical equipment provider or service representative.

**WARNING**  **Disconnect power cord.** Before moving or repositioning the VIAspire Liquefier, always disconnect the AC power cord. Failure to do so may result in damage to the unit or personal injury.


**WARNING**  **Always supervise children.** Children should always be supervised around the VIAspire Liquefier. Failure to do so may result in damage to the unit or personal injury.


**WARNING**  **Do not use if power cord is damaged.** Improper use of the power cord and plugs can cause a burn, fire, or other electric shock hazards. Do not use the unit if the power cord is damaged.

**WARNING**  **Use in accordance with your prescription.** For your safety, the VIAspire Liquefier must be used in accordance with the prescription determined by your physician.

**WARNING**  **Seek medical advice before using oxygen.** Under certain circumstances, oxygen therapy can be hazardous. Seeking medical advice before using oxygen is advisable.

## Warnings About Handling

**WARNING**  **Use extreme care when filling.** Use extreme care when filling your Liquid Oxygen Portable.

**WARNING**  **Keep on a firm, flat surface.** Always ensure that the VIAspire Liquefier is operating on a firm, flat surface.

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## Cautions and Notes

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



**NOTE** Reserve an electrical outlet. Do not connect to an electrical outlet controlled by a wall switch. No other appliances should be plugged into the wall outlet.



**NOTE** Plug into grounded receptacle. The VIAspire Liquefier has a three-conductor plug with a ground pin. Plug into only a grounded receptacle.



**NOTE** Have a full cylinder of oxygen on hand. Inspired Technologies recommends the medical equipment provider leaving a full cylinder of oxygen with the patient after setting up the VIAspire Liquefier and instructing the patient to always keep a full cylinder on hand.



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## Indications for Use

The Inspired Technologies VIAspire Liquefier is intended as an accessory to an oxygen concentrator and liquid oxygen storage system for use as an aid or adjunct to delivering supplemental oxygen therapy in the home or institution. It is intended to be used with both pediatric and adult patients. It is not intended to be a life sustaining or life supporting device. The device has no contraindications.

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## Provider Checklist

Before leaving the VIAspire Liquefier 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 liquid oxygen portable is compatible with the VIAspire Liquefier.
- Instruct the patient on the safe operation of the VIAspire Liquefier and all associated accessories, and review ALL warnings.
- Leave a copy of this instruction guide with the patient.

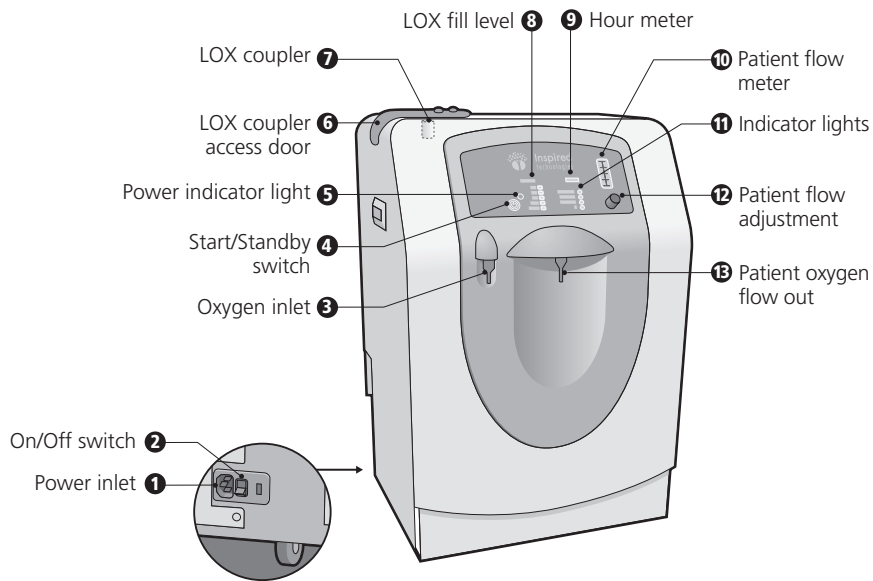
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## Overview of the VIAspire Liquefier

This section describes the parts of the VIAspire Liquefier and how to use it. Make sure that you read and understand this guide before operating the unit. Important safeguards are indicated throughout this guide; pay special attention to all safety information. Contact your medical equipment provider if you have any questions.

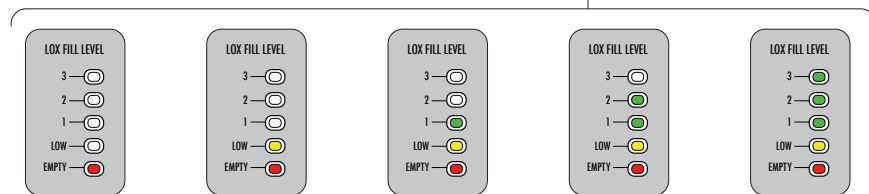
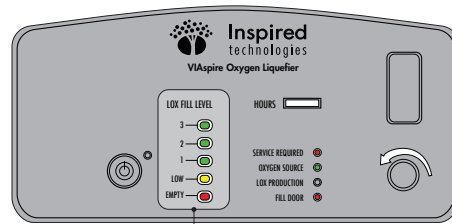
The illustration on the next page shows the key parts of the VIAspire Liquefier.

# VIAspire Liquefier



## Fill Light Sequence

The liquefier front panel has a set of stacked lights to indicate the amount (in liters) of liquid oxygen (LOX) available in the reservoir.



### Under 0.25 L

A red light (EMPTY) illuminates.

### 0.25 L to 0.6 L

The red and yellow (LOW) lights illuminate.

### 0.6 L to 1.2 L

The red, yellow, plus one green light illuminate.

### 1.2 L to 1.6 L

The red, yellow, plus two green lights illuminate.

### Over 1.6 L

All lights in bank illuminate.

# Connections, Controls, and Indicators

- 1 Power inlet
- 2 On/Off switch
- 3 Oxygen Inlet: Connect Oxygen tubing from concentrator to this connector.
- 4 Start/Standby Switch: Turns operation of unit on and off. Main AC power is still on. Press and hold for 5 seconds to turn VIAspire Liquefier on and off.
- 5 Power indicator light – Illuminated Green LED above the switch indicates that AC power is on.
- 6 Liquid Oxygen (LOX) Coupler Access Door: Covers filling connector for the VIAspire Portables—lifting the door causes the VIAspire Liquefier to stop running and to stay off for 5 minutes after the door is closed. Liquefaction begins a few minutes after the unit resumes running.
- 7 Liquid Oxygen (LOX) Coupler (under LOX Coupler Access Door): Used to fill VIAspire Portables. Designed only for portables delivering 93% oxygen to the patients.
- 8 Liquid Oxygen (LOX) Fill Level: Indicates the approximate amount of liquid oxygen in the VIAspire Liquefier's internal oxygen reservoir.
- 9 Hour Meter: Measures time the Liquefier is in Liquefaction mode.
- 10 Patient Flow Meter: Indicates oxygen flow is being delivered to the patient through the Patient Oxygen Flow Out (13).
- 11 Indicator Lights:
  - a. Service Required (top light) – Lights up red when service is required.
  - b. Oxygen Source – Lights up green if the source oxygen is greater than 87% pure and liquefaction can occur. Lights up red if source oxygen is under 87% pure.
  - c. LOX Production – Reserved for future use. Currently not functional.
  - d. Fill Door – Lights up red when the fill door is open.
- 12 Patient Flow Adjustment: Used to adjust flow to the patient per the patient's prescription. Turn counter-clockwise to increase flow.
- 13 Patient Oxygen Flow Out: Connect patient cannula to this connector.

## Getting Started

Before you start using the VIAspire Liquefier, be sure to read the preceding section about dangers, warnings, and handling. Then follow these steps to get started.

### Choosing a Location

Before using the VIAspire Liquefier for the first time, locate the unit in an appropriate place:

- Avoid placing the oxygen station next to heaters, radiators, or hot air registers. It should be kept at least 5 feet (1.6m) away from hot, sparking objects or naked sources of flame.
- Do not use in a closet or other enclosed space.
- Always ensure that the VIAspire Liquefier is operating on a firm, flat surface.

**WARNING** The VIAspire Liquefier should be at least 6 inches away from walls, draperies, or furniture to ensure sufficient airflow.

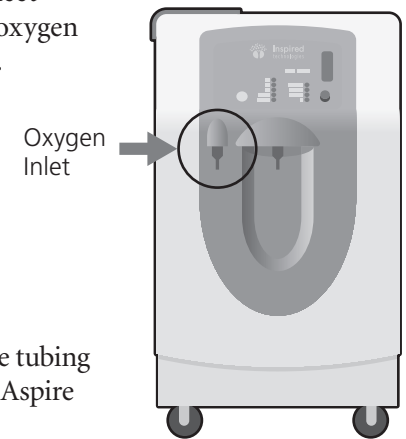
**CAUTION** Allow the VIAspire Liquefier to warm to room temperature if it has been sitting in a cold environment for an extended period of time.

**CAUTION** Assure voltage receptacle(s) are capable of supplying adequate current. Do not overload circuits.

## Connecting the VIAspire Liquefier to a Concentrator

The VIAspire Liquefier can be used with any 5 liter per minute concentrator that is equipped with an oxygen sensing device to assure acceptable purity levels. In addition, the VIAspire Liquefier has an oxygen purity sensor at its input to further assure that high purity oxygen is connected.

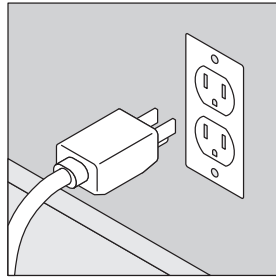
- 1 Using oxygen tubing, connect one end of the tube to the oxygen output of the concentrator.
- 2 Turn on the concentrator.
- 3 Set the flow indicator to read 5 LPM output.
- 4 Connect the other end of the tubing to the oxygen inlet of the VIAspire Liquefier.



**CAUTION** Do not use a humidifier on the concentrator that is supplying gas to the home oxygen liquefier. Moisture applied to the input gas stream will damage the product.

## Beginning to Liquefy Oxygen

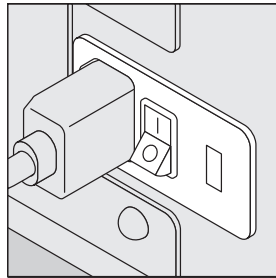
- 1** Plug the power cord into a grounded wall outlet.



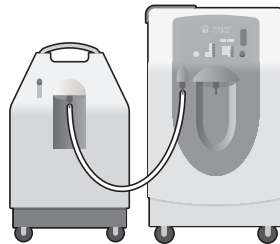
- 2** Turn the On/Off switch to the On position (I). This switch is located on the lower back of the unit.

**NOTE**

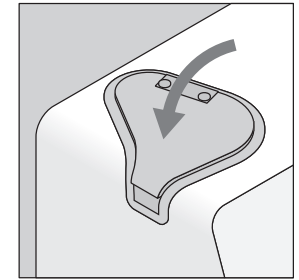
Green power indicator on front label will illuminate.



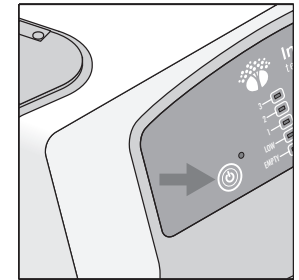
- 3** Be sure that a concentrator is connected to the oxygen inlet and that it is running.



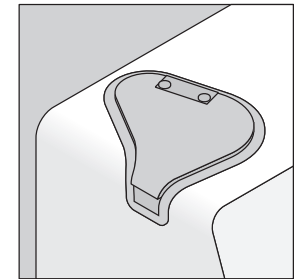
- 4** Check that the liquid oxygen coupler access door on top of the unit is closed and the red FILL light is off.



- 5** Press the On/Standby switch on the front panel to turn the unit on. The VIAspire Liquefier will begin to liquefy oxygen.



- 6** Leave the coupler access door closed to keep the VIAspire Liquefier in liquefaction mode. The internal reservoir can hold up to 1.8 liters of liquid oxygen. The LOX FILL LEVEL on the front of the VIAspire Liquefier indicates the progress of the filling process. When three green lights appear, the reservoir is full.



- 7** When the reservoir is full, the VIAspire Liquefier will automatically switch to monitoring mode until additional oxygen needs to be liquefied.

**NOTE**

The oxygen flow rate from the cannula to the patient is not affected by the operation of the VIAspire Liquefier.



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## How long does it take to liquefy oxygen?

The VIAspire Liquefier converts gaseous oxygen to liquid oxygen by cooling it to approximately -300° F (-180°C).

The first time the VIAspire Liquefier runs, or if it has sat empty for a long period of time, it must cool for 2 to 3 hours before it starts to produce liquid oxygen. It takes approximately 19.5 hours to completely fill the reservoir (3 green indicator lights) after starting from a warm state, but afterward, starting the VIAspire Liquefier when it is already cooled produces liquid oxygen in much less time.

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## Filling a VIAspire Portable

After the VIAspire Liquefier has liquefied enough oxygen, you can fill your portable by following these instructions.

**WARNING** Before filling a portable, read and follow the VIAspire Oxygen Portable product manual.

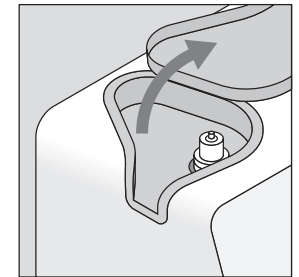
**WARNING** If the Liquid Oxygen Coupler Access Door on top of the VIAspire Liquefier is opened and the unit continues to run, do not fill the portable. Contact your medical equipment provider to service the equipment.

**CAUTION** The VIAspire Portable is designed to accept 93% pure liquid oxygen from the VIAspire Liquefier. Most oxygen portables are not compatible. Attempting to use an incompatible portable device may damage the VIAspire Portable or Liquefier, or could lead to injury.

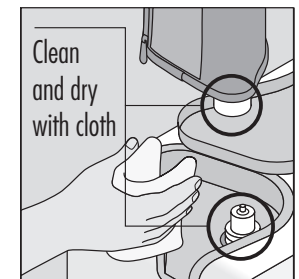
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## Instructions

- 1 Open the Liquid Oxygen Coupler Access Door on the top of the VIAspire Liquefier. This will stop the liquefaction process.

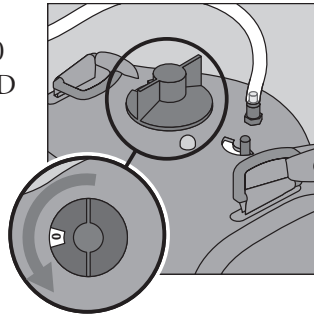


Use a clean, dry, oil-free, lint-free cloth to clean and dry the couplers on both units.



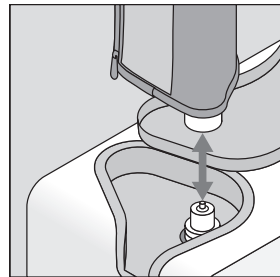
2

On the VIAspire Portable, turn the Patient Flow Indicator to the 0 position and assure that the CF/SD switch is in the “SD” position.



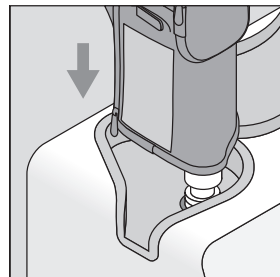
3

Align the coupler on the bottom of the VIAspire Portable with the coupler in the dock area on top of the Liquefier.



4

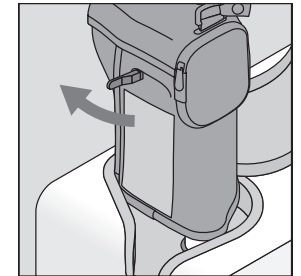
Press firmly on the top of the VIAspire Portable, keeping it in an upright position. The VIAspire Liquefier and Portable are now connected.



5

Open the Vent Valve on the VIAspire Portable to begin filling the portable.

Hold down the VIAspire Portable in place throughout the filling process.



**NOTE**

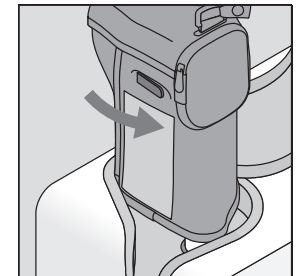
The hissing sound you hear is the sound of some oxygen escaping; this is normal.

**NOTE**

You may see vapor around the connection. This is normal and due to the great difference in temperatures between the liquid oxygen and the warm air surrounding the VIAspire Portable.

6

When the portable is full, close the valve. You will know that it is full when the hissing sound changes tone, and some liquid comes out of the vent line.



- 7** Lift the portable off of the VIAspire Liquefier.
- If the portable does not separate easily, do not use force. The VIAspire Liquefier and Portable may be frozen together, which sometimes occurs. A slight twisting motion will release them.
- Wait until the units warm up for 3 to 5 minutes, and then they will separate with slight effort.
  - Do not touch any frosted parts.
  - If any liquid is leaking from the liquefier reservoir or the VIAspire Portable after separation, reattach the portable immediately, then separate the units again.
  - If liquid continues to leak, leave the units connected and call your medical equipment provider.

- 8** Close the Coupler Access Door. After a short period of time, the VIAspire Liquefier will begin liquefying to replenish the liquid oxygen level.

**WARNING** Should any excessive leakage occur, to the point that a stream of liquid is present, leave the area and call your medical equipment provider immediately.

**WARNING** Liquid or cold gaseous oxygen can cause frostbite on the skin. Oxygen will result in increased fire hazard.

## Troubleshooting

The following troubleshooting chart should help you analyze and correct minor system malfunctions. If these procedures do not help, call your medical equipment provider. Do not attempt to do any other maintenance as you could harm yourself of the unit.

**WARNING** To avoid electric shock hazard, do not attempt to remove the Liquefier's exterior cabinet. The cabinet should be removed only by your medical equipment provider.

| Problem   | Solution   |
|---|--|
| No indicator lights                                       | <ul style="list-style-type: none"> <li>• Check to be sure that the electric cord from the VIAspire Liquefier is plugged into the wall outlet.</li> <li>• Be sure that the "On/Off" switch at the power inlet connector is turned to the "On" (I) position.</li> <li>• Test to make sure the wall outlet has power by plugging in a lamp.</li> </ul>  |
| Green POWER light is lit, but liquefaction does not occur | <ul style="list-style-type: none"> <li>• The VIAspire Liquefier may be in standby mode. Wait at least 20 minutes after turning on the power to unit for Liquefaction to begin.</li> <li>• The VIAspire Liquefier will not operate while a portable is being filled or for 5 minutes afterward.</li> <li>• Be sure that Liquid Oxygen Coupler Access Door is closed. If the FILL light is red, the door is open.</li> <li>• If the red Oxygen Source light is red, check the concentrator to be sure that it is turned on and operating properly. Check the tubing for leaks or kinks and be sure that adequate oxygen is flowing to the VIAspire Liquefier.</li> <li>• If the LOX FILL LEVEL has three green lights, the reservoir is full and the VIAspire Liquefier should not liquefy more oxygen.</li> </ul> |
| Portable is not filling                                   | <ul style="list-style-type: none"> <li>• Be sure that there is adequate liquid oxygen in the reservoir. Check the LOX FILL LEVEL gauge to see if the VIAspire Liquefier is empty or low, indicated by no green lights. Always operate the VIAspire Liquefier in liquefaction mode to be sure that you have a steady supply of liquid oxygen.</li> <li>• Be sure that the couplers are compatible and that you are using a portable that is compatible and rated for 93% oxygen.</li> <li>• Be sure that the portable's Vent Valve is open during the filling process.</li> </ul>   |

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## Cleaning and Maintenance

To ensure that your VIAspire Liquefier operates properly, please maintain the equipment on a regular basis by following these instructions.

- Every time you fill a portable, first clean and dry the liquid oxygen couplers on both the VIAspire Liquefier and the portable with a dry, lint-free cloth.
- Wipe the outside cabinet of the VIAspire Liquefier using a clean, damp, lint-free cloth.
- Keep the area clear around the VIAspire Liquefier to prevent air openings from being blocked. The unit should be at least 6 inches from walls or objects that might prevent the proper flow of air, and also away from sources of pollutants or fumes.

### NOTE

There are no user serviceable components in the VIAspire Liquefier. Refer all service requests to your medical equipment provider.

### NOTE

Preventative maintenance should be performed on an annual basis (at a minimum) by a qualified medical equipment provider.

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## Accessories

Inspired Technologies recommends using only cannula specifically intended to be used with Oxygen delivery systems. Cannula should be capable of delivering up to 8 LPM of continuous flow; maximum length that can be used is 35 ft. Contact your homecare dealer for recommendations and details. Refer to the cannula manufacturers instructions for proper cleaning and maintenance procedures.

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## Specifications

|                                     |                     |                             |
|-------------------------------------|---------------------|-----------------------------|
| Input                               | Voltage             | 120 VAC + 10%               |
|                                     | Frequency           | 60 Hz                       |
|                                     | Current             | 8 A                         |
| Fuses                               | 10 A slow blow, 3AB |                             |
| Average Power Consumption           | 700 Watt, 960 VA    |                             |
| Oxygen Input                        | Required            | > 85% O <sub>2</sub> purity |
|                                     | Pressure            | 5 to 10 psig                |
| Weight                              | 180 lb + 5 lb       |                             |
| Liquefaction rate (after cool down) | 0.16 L LOX/hour     |                             |
| 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,               |