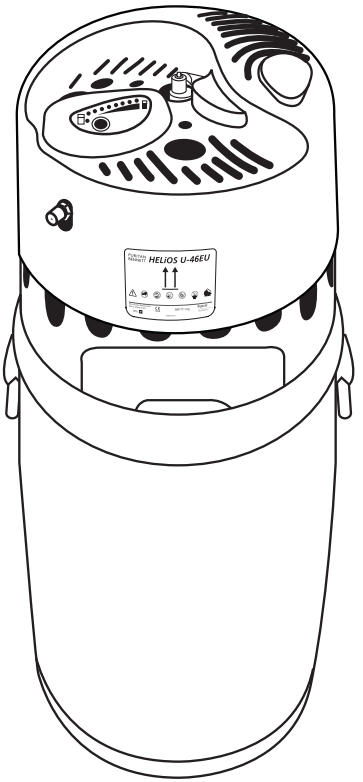
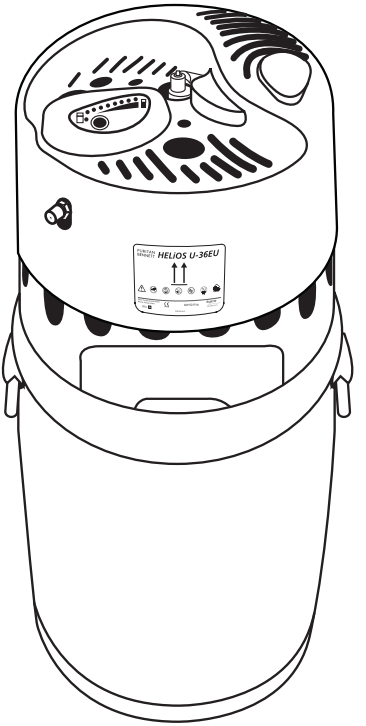
CAIRE Inc.

HELiOS™ Universal™ Models: U-46EU, U-36EU, U-46SW





Home Use Guide

HELiOS is a trademark of CAIRE Inc.

To obtain information about a warranty, if any, contact CAIRE Inc. Technical Services Department, or your local representative.

Covered by one or more of the following U.S. Patents and foreign equivalents: 6,742,517 and 6,575,159.

This device is intended only for the delivery of medical grade oxygen as prescribed by your physician.

If you have questions about the operation of the equipment, please contact your oxygen supplier.

Contents

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Safety Information

This section contains important safety information related to general use of the *HELiOS*® *Universal* Reservoir.

Other important safety information appears throughout the manual in sections that relate specifically to the precautionary information. Be sure to read all text surrounding all precautionary information.

Before use, carefully read this manual and all precautionary information in boldface type, and product specifications.

Warnings

Warnings are identified by the WARNING symbol shown above or other relevant symbols, as shown.

Warnings alert the user to potential serious outcomes (death, injury, or adverse events) to the patient or user.

WARNING: Oxygen supplied from this equipment is for supplemental use and is not intended to be life supporting or life sustaining. This equipment is not intended for use by patients who would suffer immediate, permanent, or serious health consequences as a result of an interruption in the oxygen supply.

Do not smoke near this equipment. Keep cigarettes or burning tobacco away from the area where equipment is operated.

Keep flammable materials away from this equipment. Oils, grease, including facial creams and petroleum jelly, ignite easily and may burn rapidly in the presence of oxygen. Never lubricate any part of this equipment.

Do not touch liquid oxygen or parts that have been in contact with liquid oxygen. Liquid oxygen is extremely cold (-297 °F / -183 °C). When touched, liquid oxygen, or parts of the equipment that have been carrying liquid oxygen, can freeze skin and body tissue.

Always keep the Reservoir in an upright position.

Keep this equipment away from electrical appliances. Use and store the Reservoir at least five feet from electrical appliances that may cause heat or sparks.

Keep oxygen equipment away from open flames. Use and store the Reservoir at least five feet away from equipment such as furnaces, water heaters, and stoves that may contain open flames.

Keep equipment in a well-ventilated area at all times. The Reservoir periodically releases small amounts of oxygen gas that must be ventilated to prevent buildup. Do not store liquid oxygen equipment in a closet, car trunk, or other confined area. Do not place blankets, draperies, or other fabrics over equipment.

Name and address of manufacturer

Authorized representative in the European Community

WARNING: Never tamper with the equipment. Doing so could create a hazardous condition and possibly cause the equipment to work improperly.

WARNING: Always keep tubing or oxygen supply line away from path of walking to avoid potential trip or fall.

WARNING: When you attach the external flow control valve to the Reservoir, ensure that the connection is tight. If a hissing sound is heard, tighten the flow control valve hand nut until the hissing stops.

Cautions

Cautions are identified by the CAUTION symbol shown above.

Cautions alert the user to exercise care necessary for the safe and effective use of the *Universal* Reservoir.

CAUTION: Although there are no risks associated with the disposal of any components within this device, in the interests of environmental protection, it is recommended that all used or faulty components that are under warranty be returned to the manufacturer.

CAUTION: When replacing the 9 volt battery from the Reservoir contents indicator (see manual section *Low Battery Level*), carefully dispose of the old battery with due regard for the environment.

Notes

Notes are identified by the NOTE symbol shown above.

Notes are listed before or after procedural steps or information and provide additional guidelines or information on the subject being described.

Definition Of Symbols

Symbol	Definition
	Reservoir Full
	Reservoir Empty
	Low Battery
IPX1	Drip Proof
	Type BF (Electrical Safety)
	Manufacturer
	Keep reservoir in upright position
	Oxygen in liquid phase at connection
	Oxygen in gas phase at connection

Definition Of Symbols (continued)

Symbol	Definition
	Refer to documentation for information.
SN	Serial Number
	Fragile. Handle with care.
	Keep dry
	Non-flammable, non-toxic gas. Oxygen is a non-flammable, non-toxic gas.
	Fire intensifying risk. High concentration of oxygen can cause rapid burning of other substances.
CE 0029	This device complies with the requirements of Directive 93/42/ EEC concerning medical devices. It therefore bears the CE marking as shown.
 0029	This pressure vessel complies with the requirements of Directive 1999/ 36/EC concerning transportable pressure equipment. It therefore bears the Pi marking as shown.
GW	Gross Weight

Label Description

Legend

1	Working Pressure
2	Test Pressure
3	Tare Mass
4	Water Capacity
5	Inspection Mark
6	HELiOS Model Number: U-46 EU, U-36 EU, or U-46 SW
SN	Serial Number
⚠	Refer to Manual

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Introduction

Your *HELiOS*™ *Universal*™ Reservoir is designed to store liquid oxygen. The *Universal* Reservoir is available in three models: the U-46EU and U-46SW hold 110 pounds (49.9 kg) of liquid oxygen. And, the U-36EU holds 85 pounds (38.56 kg) of liquid oxygen.

The *Universal* Reservoir can be used to fill both *HELiOS* Portable models H300 and H850, and Companion Portable models C1000, C1000 Transport, C550 and C500.

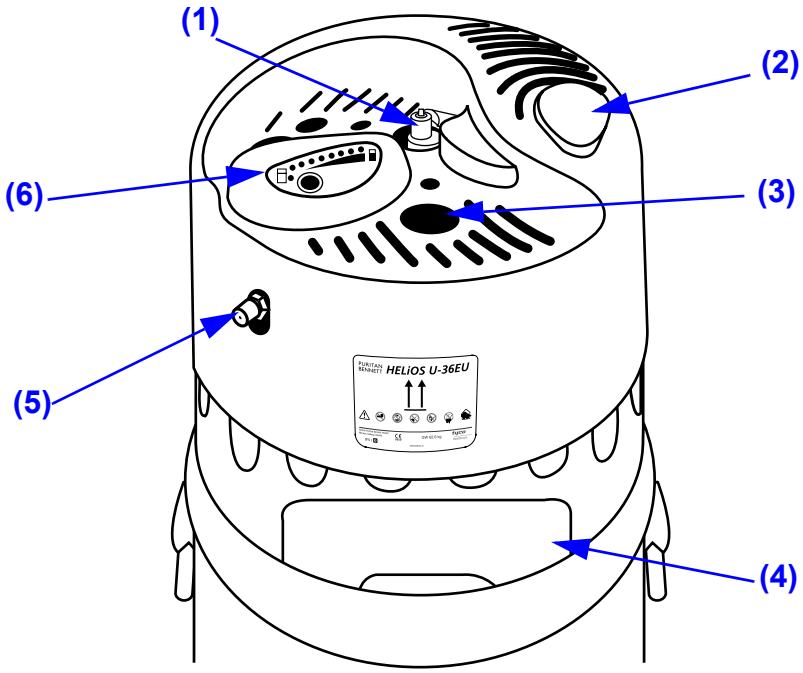
It is recommended that you breathe your prescribed oxygen rate directly from the Portable. You can, however, connect the *HELiOS* Portables to the *Universal* Reservoir. See the section *Connecting the HELiOS Portables to the Universal Reservoir*.

When you are in your home and not moving about, such as in the evening or while you are sleeping, you are encouraged to connect the *HELiOS* Portable to the *Universal* Reservoir with an oxygen supply line through the external flow control valve provided with your Reservoir (demand mode only for the H850) . When the *HELiOS* Portable is connected to a *Universal* Reservoir in this manner, the oxygen you breathe is supplied by the Reservoir.

Or, for continuous oxygen flow, connect a single-lumen cannual directly to the external flow control valve.

Your oxygen supplier or home care provider must refill your Reservoir periodically depending upon your rate of oxygen use.

Reservoir



(1) **Liquid Oxygen Fill Connector:** Used to fill the Portable with liquid oxygen.

(2) **Release Button:** Used to disengage the Portable from the Reservoir after filling.

(3) **Pressure Gauge:** Displays the status of pressure inside the Reservoir

(4) **Moisture Container:** Used to collect water that may accumulate.

(5) **Oxygen Outlet Connector:** Used to directly supply gaseous oxygen through an external flow control valve.

(6) **Contents Indicator:** Displays amount of liquid oxygen remaining in the Reservoir.

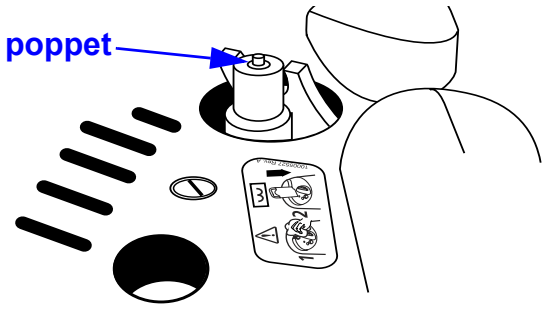
Filling the Portable

Fill the Portables by engaging the liquid oxygen fill connectors on the Portable and Reservoir. Open the vent valve to begin the fill. Close the vent valve to terminate the fill. Depress the Reservoir release button to disengage the Portable from the Reservoir.

General instructions of how to fill a Portable are provided in this manual. For product-specific details, see the *Home Use Guide* or *Operating Instuctions* for your specific Portable model.

WARNING: Using a clean, dry, lint free cloth, wipe the fill connector dry on both the Reservoir and Portable before filling to prevent freezing and possible equipment failure.

WARNING: Extreme cold hazard. Do not press or disturb the plastic poppet (shown below) in the center of the fill connector on the Reservoir. This will cause a release of liquid oxygen from the fill connector.



1. Check the contents indicator on the Reservoir (Figure 1) by pressing the blue button to ensure there is enough liquid oxygen for filling purposes. If the yellow light comes on, you may proceed with filling the Portable, but you should inform your oxygen supply company.

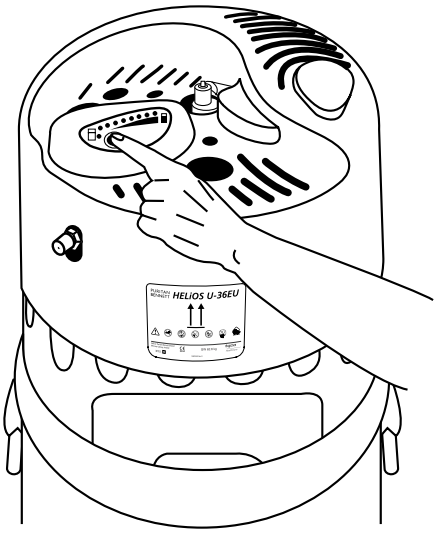


Figure 1: Checking Reservoir contents

2. Using a clean, dry, oil-free cloth, wipe the male fill connector on the Reservoir and female fill connector on the Portable (Figure 2).

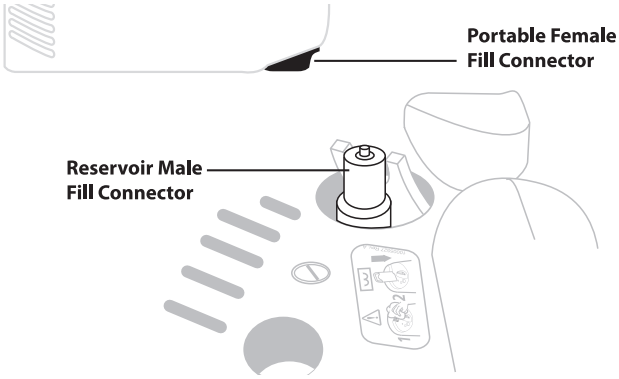


Figure 2: Clean Fill Connectors

3. Position the Portable over the recessed area in the top of the Reservoir. (Figure 3).
4. Carefully lower the Portable into place, ensuring that the fill connectors are properly aligned.
5. Place one or both hands on top of the Portable and press straight down directly over the fill connector, being careful not to depress the release button on the Reservoir when engaging (Figure 3). This will lower the Portable approximately 3/8 inch (10 mm). Continue to apply downward force to ensure the fill connectors remain engaged.
6. While holding the Portable in the fill position (Figure 3), pull down and hold the vent valve lever in the open position (Figure 4). Open is 90° from the normal OFF position. A hissing noise should be noticeable. During filling, maintain a slight downward force on the Portable with one hand to keep the Portable steady, and maintain proper filling position. Do not allow the Portable to move upward until fill is complete.

WARNING: Do not open the vent valve during non-fill use. Excessive discharge of liquid oxygen could create a fire hazard and/or cause personal injury.

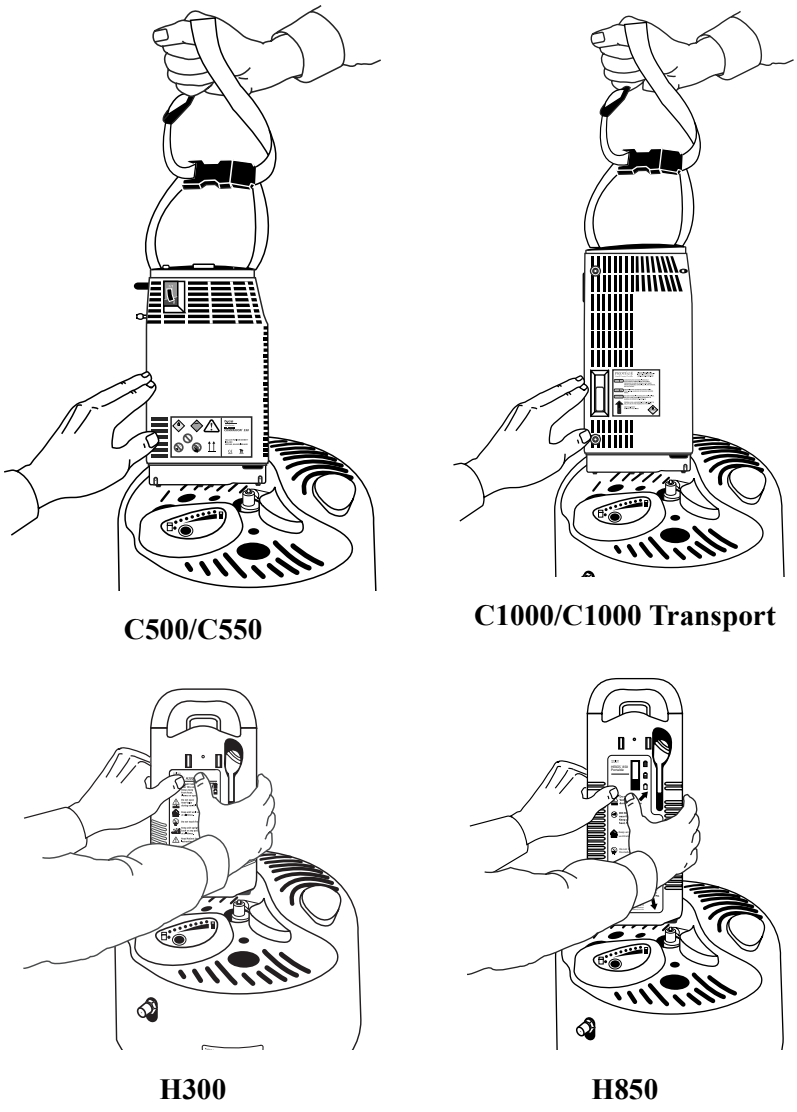
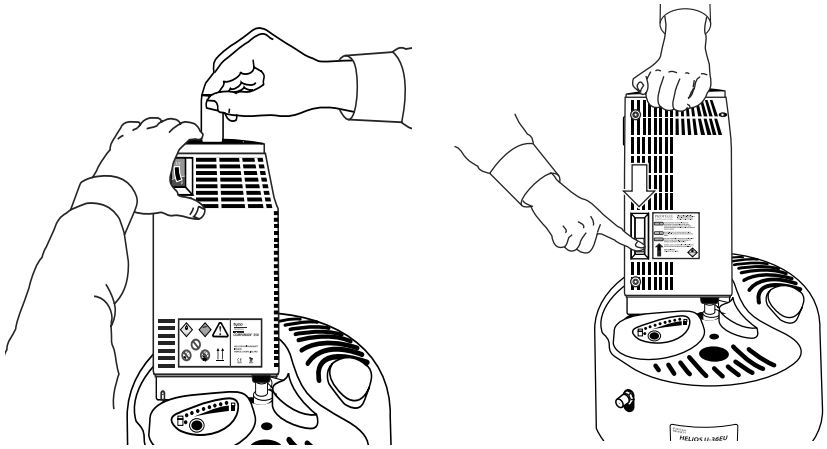
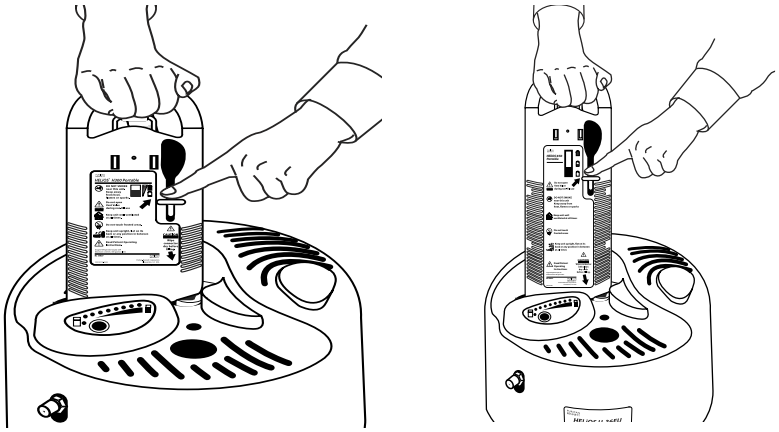


Figure 3: Positioning the Portable for filling



C500/C550

C1000/C1000 Transport



H300

H850

Figure 4: Open vent valve during filling

Note: When the Portable is empty, fill time is usually between 60 and 80 seconds for the H850 and 25 and 60 seconds for the H300.

The maximum fill time for the C1000 is 1 minute, 45 seconds; for the C1000 Transport, 2 minutes; for the C500/C550, 1 minute, 30 seconds. Fill times, however, will typically be less than the maximum ratings. Saturation pressure of the reservoir and the temperature of the portable both affect fill times.

Also,the amount of time to fill the Portable depends on the amount of oxygen remaining in the Portable.

WARNING: Do not leave the Portable unattended during the filling operation.

7. When you notice a change in the sound of venting gas followed by a dense, white vapor forming around the Reservoir cover, close the Portable vent valve by returning the vent lever to the upright position.

CAUTION: If the vent valve fails to close and the hissing continues, remove the Portable by depressing the Portable release button on the Reservoir. Ensure that the Portable is kept upright and is not tipped at all during this time. The Portable will stop venting in a few minutes. Allow the Portable to warm until you can close the vent valve. The Portable may require as much as 60 minutes to restore adequate pressure for accurate oxygen flow. An alternate source of oxygen, such as a flow control valve attached to the Reservoir, can be used if needed.

Note: For shorter planned use times, you can partially fill the Portable by closing the vent valve sooner than normal. The Portable will then be lighter to carry.

8. Disengage the Portable from the Reservoir by holding the carrying handle and depressing the release button (Figure 5). Always hold the Portable with at least one hand when attempting to disengage it.

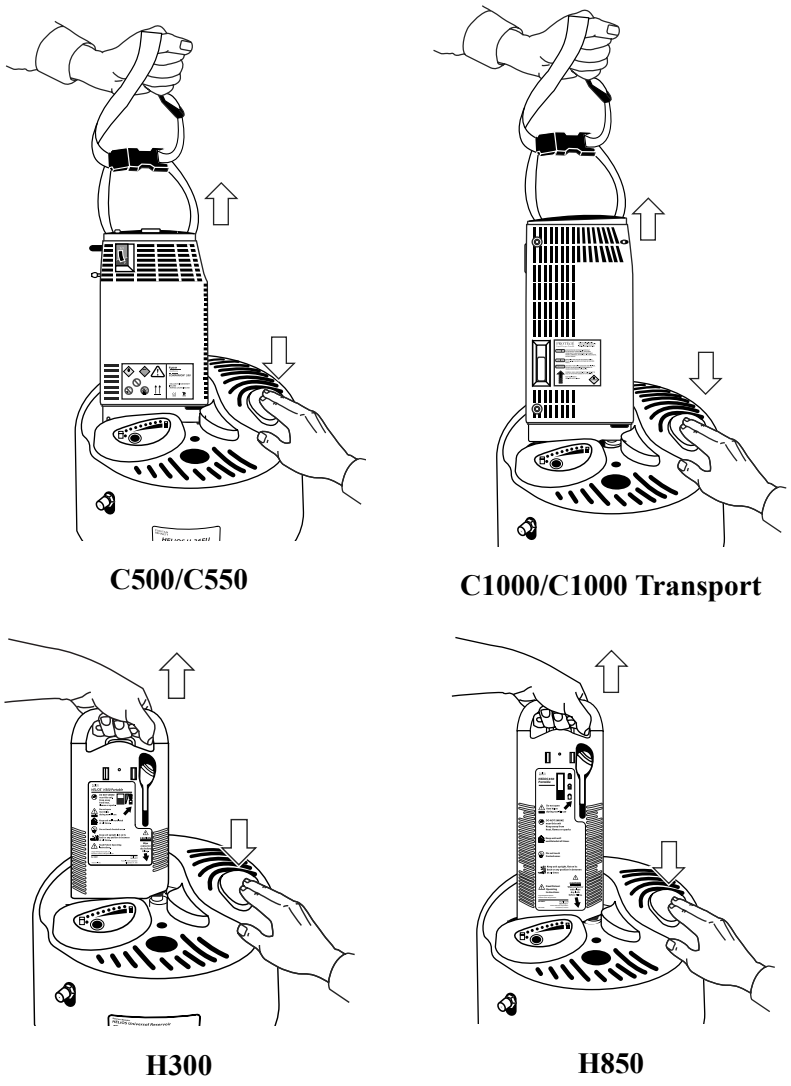


Figure 5: Disengaging the Portable

CAUTION: If the Portable will not disengage easily from the Reservoir, they may have become frozen together. Do not use force. Simply allow a few minutes for the frozen parts to warm, then disengage the Portable when the ice has melted.

WARNING: If a major liquid oxygen leak from the Reservoir fill connector occurs when you disengage the Portable — that is, a steady stream of liquid oxygen — step away from the Reservoir and notify your oxygen supplier immediately. Stay away from the Reservoir until your supplier ensures that it is safe.

CAUTION: If a minor liquid oxygen leak from the Reservoir fill connector occurs when you disengage the Portable, re-engage and disengage the portable to help dislodge any ice or other obstruction. If the liquid oxygen leak persists, notify your oxygen supplier.

Note: Immediately after filling, you may hear a slight hissing sound from the Portable. This is normal and will stop after a few minutes.

CAUTION: If the hissing sound from the Portable does not stop within a few minutes after a fill, and excessive visible frosting develops on the Portable, see Note 4 in the *Troubleshooting* section.

9. Check the oxygen contents indicator, Figure 6, to make sure the Portable is filled to the desired level. The amount of liquid oxygen contained in the Portable is measured by a built in spring scale. To operate the contents indicator:
   a. Lift the Portable by the contents indicator strap.
   b. Push the bottom backside of the H850 or H300 Portable so that it is straight up and down.
   c. Observe the green bar that displays the liquid oxygen contents level inside the clear window.

d. On the Companion models, unsnap the plastic buckle and lift the Portable by the end of the carrying strap that is closest to the indicator. The pointer indicates approximately how much oxygen remains in the Portable.

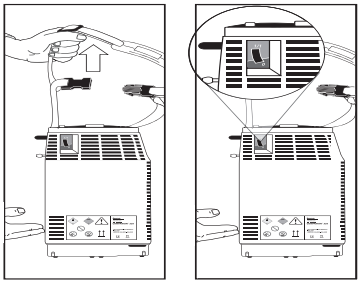
Notes:

1. On the Companion models C1000/C1000 Transport, the contents indicator is located on top of the Portable. On Companion models C500/ C550, the contents indicator is on the side of the Portable near the top.

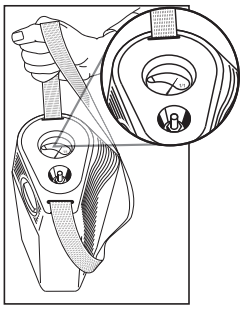
2. Do not try to overfill the Portable. Once you hear the change in the sound of venting gas and see the cloud of white vapor, the Portable is full. Continuing the fill process will not put any more oxygen in the Portable. Overfilling may cause drops of liquid oxygen to spray from the bottom of the Portable.

3. After each fill, do not try to refill the Portable again for at least 30 minutes. This will prevent the possibility of the Portable wasting oxygen and prevent the vent valve from potentially freezing.

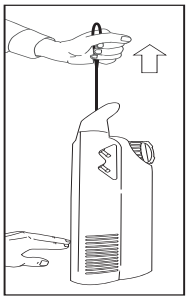
4. The number of times you have to fill up or top off your Portable depends upon your particular circumstances. Two factors that may affect your use times are the prescribed setting you use and the frequency of your breath rate.

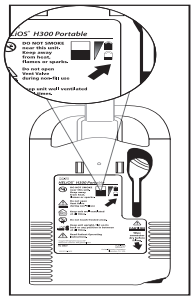


C500/C550

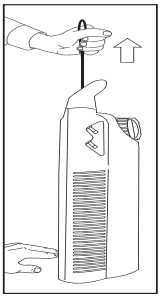


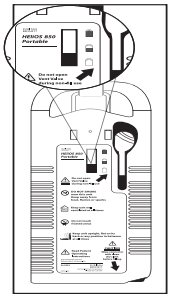
C1000/C1000 Transport





H300





H850

Figure 6: Checking Portable oxygen contents

Connecting the *HELiOS* Portables to the *Universal* Reservoir

When you are in your home and not moving about, such as in the evening or while you are sleeping, you are encouraged to connect the Portable (H300 or H850 only) to the *Universal* Reservoir with an oxygen supply line. For the H850 Portable, this configuration is to be used in demand mode only; that is, D1.5 through D4.

To keep from wasting oxygen, you should connect the Portable to the Reservoir at least 10 hours per 24 hour period. It is important that the Portable be nearly empty so that the oxygen from the Portable comes directly from the Reservoir. This will maximize the efficiency of the system.

External Flow Control Valve

An external flow control valve is provided with your *Universal* Reservoir (Figure 7). It should be attached as shown in the illustration below.

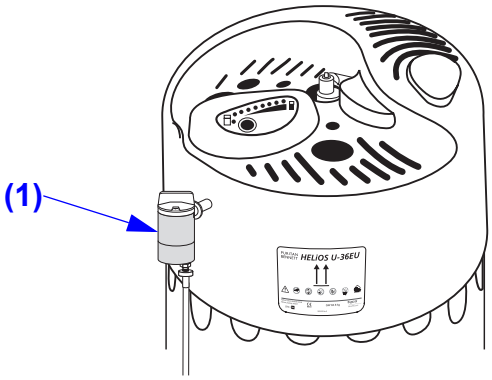


Figure 7: External flow control valve

(1) external flow control valve

WARNING: Only use the manufacturer-specified external flow control valve provided with your *Universal* Reservoir.

If the external flow control valve was not attached to the Reservoir when you received it, it must be attached before you can connect the Portable to the Reservoir via the oxygen supply line.

To attach the external flow control valve, screw the flow control valve hand tight nut onto the Reservoir oxygen outlet connector.

WARNING: When you attach the external flow control valve to the Reservoir, ensure that the connection is tight. If a hissing sound is heard, tighten the flow control valve hand nut until the hissing stops.

Connect your Portable to the Reservoir as follows:

1. Thread the oxygen supply line nut onto the manufacturer-specified external flow control valve on the Reservoir as pictured below (Figure 8). Make sure the oxygen supply line and connection is tight. If a hissing sound is heard, tighten until the hissing stops.

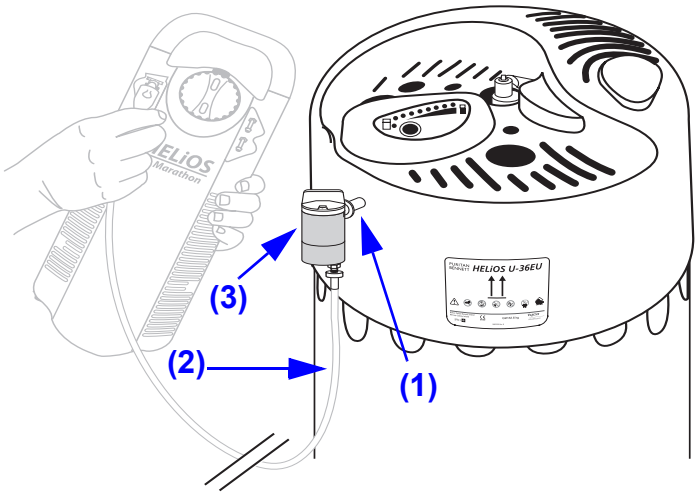


Figure 8: Connecting supply line to Reservoir

(1) oxygen outlet connector

(2) oxygen supply line

(3) manufacturer-specified external flow control valve

2. Connect the opposite end of the oxygen supply line to the Portable at the oxygen supply connector by pushing the supply line into the connector. Figure 9 shows the H850. The H300 connector is in the same location. The connectors should snap together. If the supply line does not easily engage into the Portable, push the silver

release button on the Portable connector and try again.

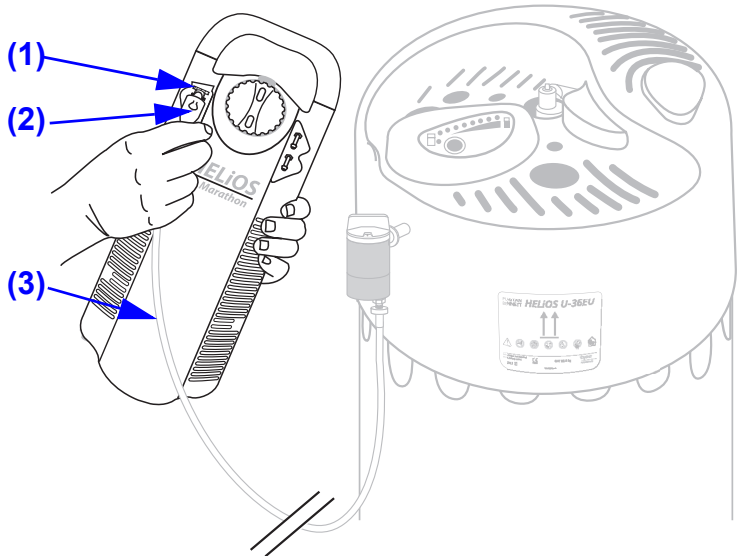


Figure 9: Connecting supply line to H850 Portable

(1) release button

(2) oxygen supply connection

(3) oxygen supply line

3. Set the external flow control valve to 10 LPM and set your Portable to the prescribed setting for demand use. You can now breathe off the Portable as long as there is oxygen in the Reservoir. You can determine the oxygen contents in the Reservoir by pushing the blue button on the Reservoir contents indicator (reference Figures 1 or 12). If you get a green light, the level is fine. If the yellow light appears, inform your oxygen supply company.

CAUTION: When the *Universal* Reservoir and the Portable are connected, avoid putting the unrolled supply line in places where it might be damaged or tripped over. One sign of damage is frost on the supply line, indicating that a puncture or cut is causing an oxygen leak. If this occurs, disconnect the supply line from the Reservoir.

4. To disconnect the supply line from the Portable, push the release button and gently remove the supply line from the connector.

5. When disconnecting the supply line from the external flow control valve, first set the valve to zero.

Note: If you need continuous flow, you can breathe directly off the *Universal* Reservoir via the external flow control valve. With the external flow control valve set to zero, connect a single-lumen cannula to the external flow control valve output with a female tapered barb as shown in Figure 10.

Set the prescribed flow rate on the flow control valve. No Portable is necessary in this configuration.

The Puritan Bennett part number for this external flow control valve is 10000554. Contact your home care provider for further details on setup and use. Also, see the section *External Flow Control Valve* in this manual.

WARNING: Use only the manufacturer-specified external flow control valve provided with your *Universal* Reservoir.

CAUTION: Do not attempt to connect a female tapered barb directly to the Reservoir oxygen outlet connector. The reservoir will not function properly.

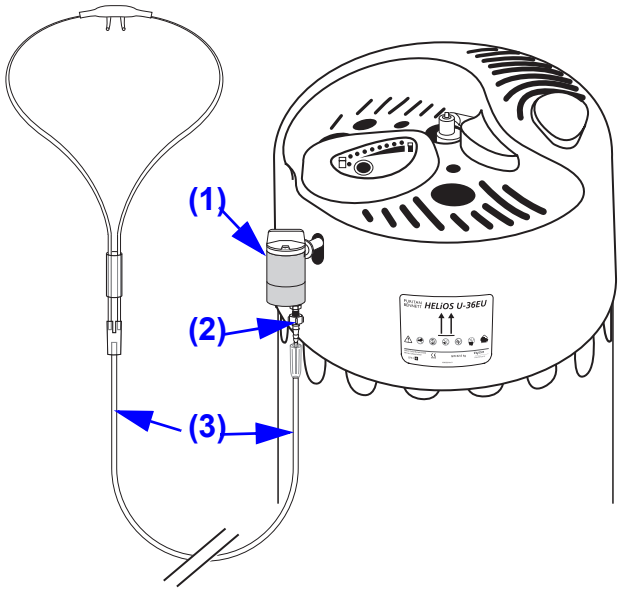


Figure 10: Breathing directly off the Reservoir

(1) external flow control valve

(2) female, tapered barb

(3) single-lumen cannula

Moisture Container

If moisture is collected, empty by pulling out the moisture container and pouring the water into a sink for disposal (Figure 11). To reinstall the moisture container push it into the Reservoir housing until it is held firmly in place. Empty the container when the water reaches the full (1/1) line or water may spill onto your floor.

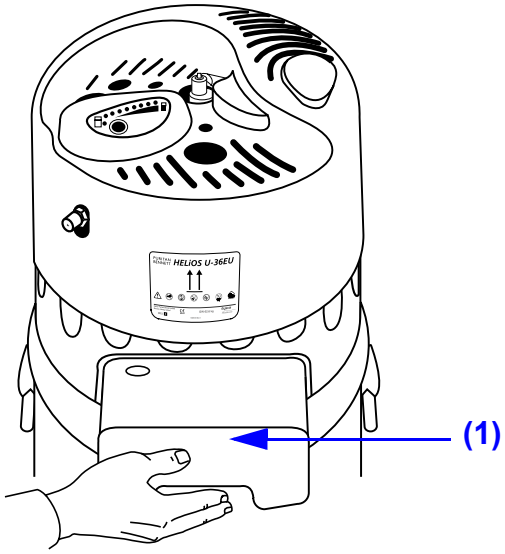


Figure 11: Moisture container

(1) moisture container

Low Liquid Oxygen Level

To determine the oxygen contents in the Reservoir, push the blue button on the contents indicator (Figure 12). If you see a green light, the level is fine. If the yellow light appears, inform your oxygen supply company.

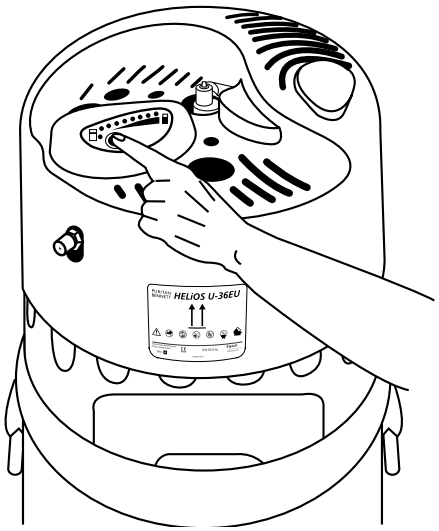


Figure 12: Checking Reservoir oxygen contents

Low Battery Level

A yellow light appears on the Reservoir contents indicator when the battery needs to be replaced. This should happen rarely. Your oxygen supply company may change your battery at their next visit or if you choose to change the battery, use a coin to open the battery door as shown below (Figure 13). Use only a 9 volt alkaline battery as pictured (Figure 14).

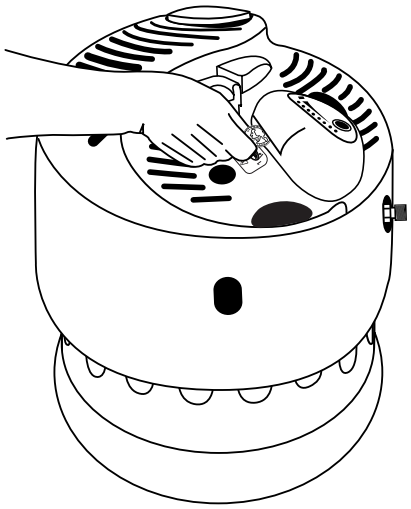


Figure 13: Battery door

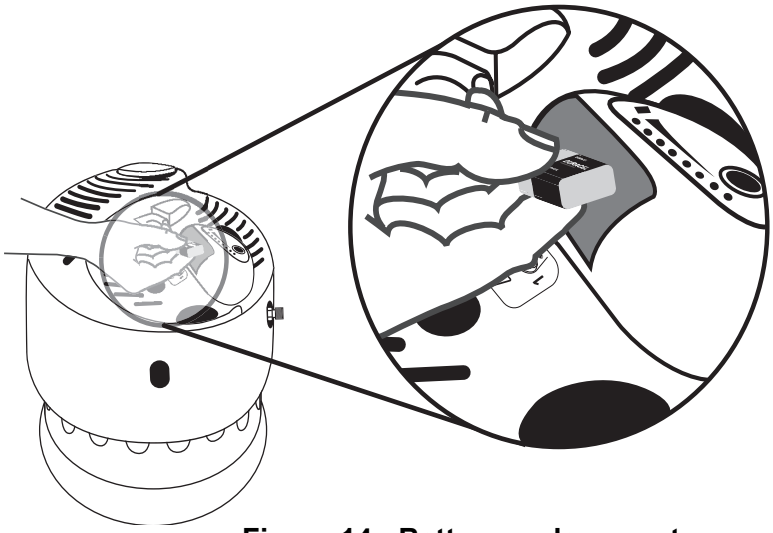


Figure 14: Battery replacement

Cleaning

Do not use alcohol, solvents, polishes, or any oily substance on oxygen equipment. If cleaning is necessary, use Sporicidin® or warm water and a mild dish washing detergent. Dampen a cloth with the Sporicidin or in the detergent and water solution and wipe the outside surfaces of the equipment until clean.

CAUTION: Do not allow water into any of the controls, the fill connector, or the oxygen supply connector.

WARNING: Never attempt to repair or disassemble this equipment. You could create a hazardous condition or cause equipment failure. If you have problems, questions, or are unsure if equipment is operating properly, call your liquid oxygen supplier.

Troubleshooting

The following information is intended to help you troubleshoot and solve simple operational problems that you may experience when using your *Universal* Reservoir.

1. **The Portable does not fill.**
   - Verify that there is oxygen in the Reservoir by pushing the contents indicator button. Make sure the Reservoir pressure gauge reads between 20.5-psi (1.4 bar) and 28-psi (1.9 bar). Contact your home care provider if the reading is not within this specified range.
   - Ensure that the Portable and Reservoir fill connectors are fully engaged throughout the filling process.
2. **Frost forms on the oxygen supply line connected to the external flow control valve on the Reservoir.**

   Frost on the supply line is most likely the result of a leaky connection or a split in the line. If the connection at the external flow control valve outlet is leaking, keep tightening the nut until the leak stops. If the supply line is split or damaged, disconnect the line from the external flow control valve and contact your home care provider.

3. **The Portable does not disengage easily from the Reservoir after filling.**

WARNING: Do not bend over the Reservoir fill connector when disengaging the Portable. Contact with liquid oxygen can cause personal injury.

The Portable and Reservoir fill connectors may have become frozen. Do not use force. Allow a few minutes for the frozen parts to warm, then disengage the Portable when the ice has melted. To prevent the Reservoir and Portable from freezing together, always wipe the male fill connector on the Reservoir and the female fill connector on the Portable with a clean, dry, oil-free cloth before filling.

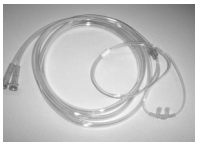
4. **Excessive frost and hissing**

   - Some hissing and frosting on the Portable is normal. If, however, the hissing sound from the Portable continues with excessive frosting on the Portable, stop using the Portable and contact your Homecare Provider.
   - Excessive frost formation on the Portable 30 minutes after a fill while the flow control valve knob is in the OFF position may be a result of possible system malfunction. Stop using the Portable and contact your Homecare Provider for service.

Note: At continuous flow rates greater than 6 LPM, it is normal to see some frost build up on the Reservoir shroud and the liquid oxygen outlet connector.

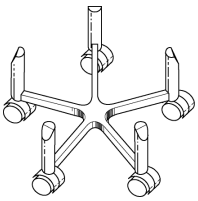
Accessories

The following accessories are available to help you obtain the most benefit from your *Universal* Reservoir System.



Dual-Lumen Cannula
An oxygen cannula delivers oxygen from the H850 or H300 Portable to your nose. The cannula has two connections: One senses when you inhale; the other delivers oxygen to you while you inhale.

Oxygen Supply Line
The supply line is used to connect your H850 or H300 Portable to your Reservoir. When the Portable is connected, the oxygen you breathe comes from the Reservoir. For instructions on how to connect the supply line, refer to the section in this manual, *Connecting the HELiOS Portables to the Universal Reservoir*.



Roller Base
The roller base allows the liquid oxygen delivery person to roll the Reservoir to your door before taking it from the house to fill. It is not recommended to patients to roll the Reservoir around frequently in the house. The Reservoir is very heavy and should not be tipped over.

You may also be instructed to use a humidifier bottle with an external flow control valve (Figure 15). When using an external flow control valve, your oxygen supply company will supply you with a supply line and a single-lumen cannula for use with the Reservoir.

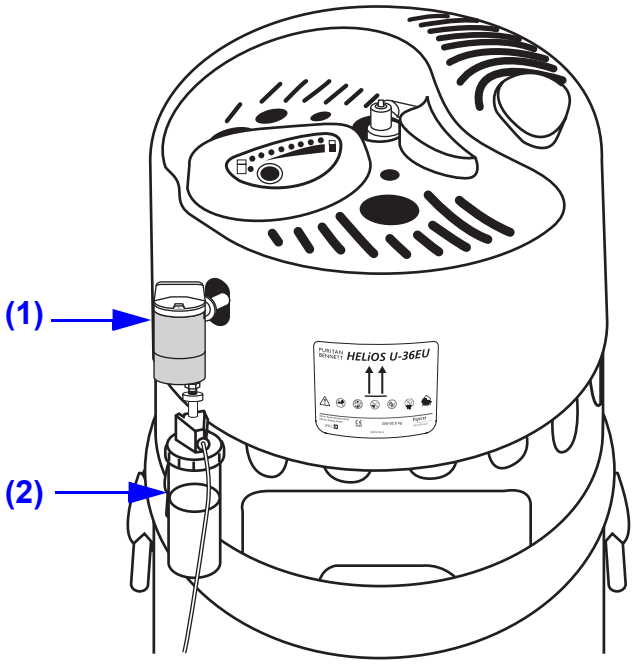


Figure 15: Humidifier bottle attaches to external flow control valve

(1) external flow control valve

(2) humidifier bottle

WARNING: Use only the manufacturer-specified external flow control valve provided with your *Universal* Reservoir.

Accessory Part Numbers	Description
B-778058-00	Dual-Lumen Cannula - 1.5 m Length (Sense and delivery in each nostril)
B-778057-00	Dual-Lumen Cannula - 2.1 m Length (Sense and delivery in each nostril)
B-701931-00	Dual-Lumen Cannula - 1.2 m Length (Sense and delivery in separate nostrils)
B-701930-00	Dual-Lumen Cannula - 2.1 m Length (Sense and delivery in separate nostrils)
B-701656-00	Oxygen Supply Line - 15.2 m Length
B-701432-00	Oxygen Supply Line, Extension - 15.2 m Length
B-701537-00	Roller Base
10000554	0-10 LPM External flow control valve

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Specifications

Volume, Weight, and Dimensions

	U-36EU	U-46EU/ U-46SW
Volume of Liquid Oxygen (typical)	36 liters/1.27 ft^3	46 liters/1.62 ft^3
Weight of Liquid Oxygen at 24 psig (166 kPa) Saturation (typical)	85 lbs/38.6 kg	110 lbs/49.9 kg
Empty Reservoir Weight	53 lbs/24.0 kg	60 lbs/27.2/kg
Full Reservoir Weight	138 lbs/62.6 kg	170 lbs/77.1 kg
Height	33.5 in/85.1 cm	37.5 in/95.3 cm
Diameter	15.4 in/39.1 cm	15.4 in/39.1 cm

Environmental Specifications

Operating: -20 °C to 40 °C (-4 °F to 104 °F)
95% maximum relative humidity

Storage: -40 °C to 70 °C (-40 °F to 158 °F)
95% maximum relative humidity

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Important Information About Your Prescription

Your name: _____

Doctor's name: _____

Doctor's phone number: _____

Date your Reservoir was received: _____

Prescribed oxygen flow setting:

- during sleep
- at rest
- during exercise

Home care company's name: _____

Home care company's phone number: _____

Emergency contact's name: _____

Emergency contact's phone number: _____

Special Instructions:

_____

_____

_____

_____

_____

_____

_____

_____

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Your local supplier:

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A Chart Industries Company

CAIRE Inc.
2200 Airport Industrial Dr., Ste. 500
Ball Ground, GA 30107

EC REP

M.D.D. Representative:
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Borngasse, 20
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