Liquid Reservoir Consumption Chart

** The following are estimates only; actual duration may vary.

Caire Model – Liberator Reservoir (Side or Top Fill)

Flow rate L/min	Approximate duration of performance, hrs		
	20 L	30 L	45 L
0.25	1185	1710	2553
0.5	593	855	1277
0.75	395	570	851
1	296	428	638
1.5	198	285	426
2	148	214	319
2.5	119	171	255
3	99	143	213
4	74	107	160
5	59	86	128
6	49	71	106
8	37	53	80
10	30	43	64
12	25	36	53
15	20	29	43

Companion Model Reservoir (Top Fill)

Flow rate L/min	Approximate duration of performance, hrs		
	21 L	31 L	41 L
0.25	1117	1663	2233
0.5	558	832	1117
0.75	372	554	744
1	279	416	558
1.5	186	277	372
2	140	208	279
2.5	112	166	223
3	93	139	186
4	70	104	140
5	56	83	112
6	47	69	93
8	35	52	70
10	28	42	56
12	23	35	47
15	19	28	37

Liquid Oxygen Troubleshooting

Problem	Possible Cause	Solution
Hissing noise	Normal.	Oxygen is venting from system.
Portable is squawking	Portable tipped over on an angle or side.	Return portable to upright position.
Unable to separate portable from base reservoir after filling	Moisture in connections has frozen units together.	Do not use force. Let units sit for 2-5 minutes to warm up and try again to separate them. If still unable to separate units, wait 30 minutes more and attempt to separate the units. If the problem persists, leave units coupled and call your VitalAire office.
Liquid oxygen leaking from fill connection on reservoir or portable after filling	Moisture in connection has frozen fill valve open.	If the amount of oxygen leaking is small, reconnect the portable to the base. Let sit for 30 minutes, separate and see if flow has stopped. If not, leave the portable attached to the reservoir and call VitalAire. **If leakage is excessive, do not attempt to reattach the portable to the reservoir. Leave the area, open doors or windows, and call VitalAire immediately.**
No flow from portable	Rotary flow selector is set between numbers.	Set flow selector on the correct number.
	The portable is empty.	Check the contents indicator and if empty – follow filling procedure.
No flow from reservoir	The flow selector is set between numbers.	Set flow selector on the correct number.
	The oxygen flow connector may have loosened. Tubing maybe crimped or disconnected.	Ensure that the oxygen flow connector is tight and not cross-threaded. Check tubing is not caught or crushed.
	The humidifier jar.	Tighten the humidifier jar being careful not to cross-thread the bottle and the lid or replace the entire humidifier. If problem continues remove and replace with flow connector and attach tubing directly.
	The reservoir is empty.	Check the contents indicator and if empty call VitalAire for a delivery.
Base is tipped over or dropped		Try carefully to right the unit. **If you cannot or if the unit is leaking liquid oxygen, leave the area, open doors or windows, and call VitalAire immediately.**
Water in tubing	Condensation from humidifier. This often occurs due to cold and hot spots along the floor. The tubing that is in a warm spot will hold more humidity in the air. As the tubing runs along a cold draft by a door or window the air doesn't have the capacity to hold as much moisture so it condensates "rains out".	Replace the tubing and hang the affected tubing so the water will drain out.
		Disconnect the humidifier jar and replace with an oxygen flow connector. Blow the water out by turning the flow selector to the largest number.
		Request water trap from VitalAire.
		Disconnect the humidifier jar and replace with an oxygen flow connector until other measures can be taken.
Water is leaking from bottom of portable	Normal.	Condensation is leaking from pad at bottom of portable. If a Caire portable – remove the condensation pad and let dry overnight and reinsert.
Ice is forming on the outside of the portable	Normal.	Condensation will freeze on the outside of the portable.
Contents gauge on the Caire Model reservoir and portable is not working	Battery needs to be replaced.	The batteries can be replaced or the driver can replace this at next scheduled delivery.
	Contact is worn.	Call VitalAire during regular business hours and arrangements can be made to replace equipment.
It doesn't feel like the oxygen from the liquid system comes out as strongly as the concentrator or cylinder	Normal.	Liquid oxygen systems operate at far lower pressure than cylinders of compressed gas.

Liquid Reservoirs and Portables Overview

Liquid oxygen reservoirs are used as a main system to fill the liquid oxygen portable and as a back up oxygen system during a power failure or equipment failure. In specialized cases, the liquid reservoir may be the only system in a home.

Liquid Oxygen Systems Safety

> Post at least one No Smoking sign in a prominent place
> No one may smoke within 5 feet (1.52 meters) of the liquid oxygen system, the tubing and nasal cannula or mask
> Follow the safety precautions for oxygen as outlined in the "Home Oxygen Safety" Brochure
> Keep all grease, oil and petroleum products (even small amounts) and flammable materials away from your oxygen equipment
> Keep the reservoir and portable units upright in a well ventilated place to prevent oxygen enrichment (not in a closet)
  - Never place the oxygen reservoir or portable near curtains
  - Never cover the oxygen reservoir or portable with clothing
  - Never carry or use a portable under any clothing
  - Never store the portable attached to the reservoir
> Use only approved oxygen tubing and delivery devices
> Do not attempt to disassemble or repair liquid oxygen equipment
> If you think your equipment is not working, review the troubleshooting guide included and if it still is not functioning call your local VitalAire office

Operating the Liquid Reservoir*

> Turn the flow selector clockwise until the prescribed flow rate (number) is visible in the dial "window"
> No oxygen will flow if the dial is set between the numbers
> Attach an oxygen flow connector (or humidifier bottle) to the oxygen outlet on the reservoir
> Attach the kink-resistant oxygen extension tubing (50' maximum length) to the flow connector on the reservoir (or humidifier if one is being used)
> Attach the other end of the kink resistant oxygen tubing to the cannula or mask using a straight or swivel connector
> If using a humidifier, the water in the humidifier will bubble while the oxygen is flowing
> Adjust the nasal cannula or mask for a comfortable fit
> Turn the reservoir to the OFF position when not in use

Check the liquid oxygen level in the reservoir daily. If the reservoir is less than 1/4 full, call VitalAire to schedule a delivery.

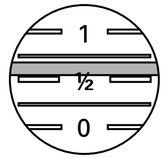
Do not touch the venting stream, liquid oxygen or any frosted parts when filling the portable. Frostbite may result.

** Manufacturer instructions can be found on our website at www.VitalAire.com under "HOME OXYGEN" (or requested from your local office)*

Reading the contents indicator

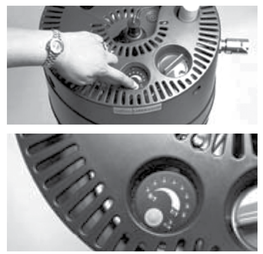
Companion Model

> The contents gauge works using a scale and is not electronic
> The unit is graduated into 4 segments (1/1 is full)
> Read the contents by viewing the top of the red line



Caire Model

> Depress the push button on top of the unit for two seconds minimum. Read the illuminated dots to indicate the contents level (1/1 is full)
> If the Low Battery Indicator lights up when the button is depressed, the battery will require changing or replacement by VitalAire staff
> The reservoir will continue to supply oxygen even if the Low Battery Indicator lights up, as long as there is liquid oxygen in the unit



Top Fill Portable
(Companion & Caire Stroller Models)

Connecting the Top Fill Portable unit to the base reservoir


figure 1


figure 2


figure 3

> Check the contents indicator that there is enough liquid oxygen in the reservoir for filling purposes
> Dry the connections on both the base reservoir and portable unit with a clean dry, lint free cloth

Caution: The fill connectors must be dry, because moisture can cause the portable to freeze to the reservoir.

> Turn the portable unit flow selector to OFF
> Hold the portable with both hands and position over the filling connector (Figure 1)
> Lower the portable carefully into place taking care to assure proper engagement of quick connections (Figure 2)
> Place one hand on top of the portable directly over the quick connector and press straight down. This will lower the portable approximately 3/8" (10mm), and assure proper engagement of the fill connectors
> The portable unit and the base reservoir are now fully joined

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

Filling the top fill portable unit

> While holding the unit in the fill position, move the vent valve lever straight out to the open position. (90˚ from normal off position.) This will result in a loud hissing noise. (Figure 3) You may also see vapor around the connection

NOTE: About 20 to 30 seconds into the filling procedure, close and reopen the vent valve one or more times to break up any ice that may begin to form around the valve stem. This will help prevent the vent valve from freezing open.

> After approximately 1-2 minutes, a distinct change in the sound of the venting gas will occur, with a stream of white gas coming from the vent line. (Fill time may vary according to the temperature of the container being filled)
> Close the vent valve lever and wait 30 seconds, then push the release lever, and slowly lift the portable unit from the base reservoir, by holding the carrying strap above the unit and depressing the release button on the top of the reservoir
> If the units will not release, wait 2-5 minutes for the units to warm up but **DO NOT APPLY FORCE**
> If they still do not separate wait 30 minutes more and attempt to separate
> If the problem persists, leave units coupled and call your VitalAire office
> Wait 10 minutes before filling another portable from your reservoir

Side Fill Portable
(Caire Stroller Model)

Connecting the Side Fill Portable unit to the base reservoir


figure 1


figure 2

> Check the contents indicator that there is enough liquid oxygen in the reservoir for filling purposes
> Dry the connections on both the base reservoir and portable unit with a clean dry, lint free cloth

Caution: The fill connectors must be dry, because moisture can cause the portable to freeze to the reservoir.

> Turn the portable unit flow selector to OFF
> Mate the portable fill connector in the upright position to the reservoir connector
> Rotate the portable counter-clockwise until you feel the pin and slot engage (Figure 1)
> Carefully and gently rotate the portable back to the upright position (Figure 2)
> Now the units are locked together

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

Filling the portable unit

> While holding the unit in the fill position, move the vent valve lever straight out to the open position. (90˚ from normal off position.) This will result in a loud hissing noise. You may also see vapor around the connection

NOTE: About 20 to 30 seconds into the filling procedure, close and reopen the vent valve one or more times to break up any ice that may begin to form around the valve stem. This will help prevent the vent valve from freezing open.

> After approximately 1-2 minutes, a distinct change in the sound of the venting gas will occur, with a stream of white gas coming from the vent line. (Fill time may vary according to the temperature of the container being filled)
> Close the vent valve lever and wait 30 seconds
> Rotate the portable counter-clockwise until the units separate
> If the units will not release, wait 2-5 minutes for the units to warm up but **DO NOT APPLY FORCE**
> If they still do not separate wait 30 minutes more and attempt to separate
> If the problem persists, leave units coupled and call your VitalAire office
> Wait 10 minutes before filling another portable from your reservoir

Important items to Remember

> Never leave the unit unattended while filling
> Fill the portable 30 minutes before use. This will also allow for proper pressure to build for use
> Liquid oxygen will slowly evaporate from a portable unit

Operating the liquid portable

> Turn the flow selector clockwise until the prescribed flow rate (number) is visible in the dial "window"
> No oxygen will flow if the dial is set between the numbers
> Attach the cannula or mask to the oxygen outlet
> Use cannula with a maximum tubing length of 7 feet
> Adjust the nasal cannula or mask for a comfortable fit
> Turn the portable to the OFF position when not in use
> Always use and store in an upright position

Cleaning your equipment.

> Wipe the exterior of your reservoir and portable unit (with the exception of the connection points) with damp (not wet) cloth
> Check the condensation collection bottle frequently during defrosting and empty as required
> Remove the condensation cup (if applicable) located on the lower part of the portable. Remove the pad from the cup and wring out any absorbed moisture. Allow the pad to dry completely before replacing it in the cup. If heavily soiled, the pad can be washed with bleach to disinfect. Replace the pad when dry

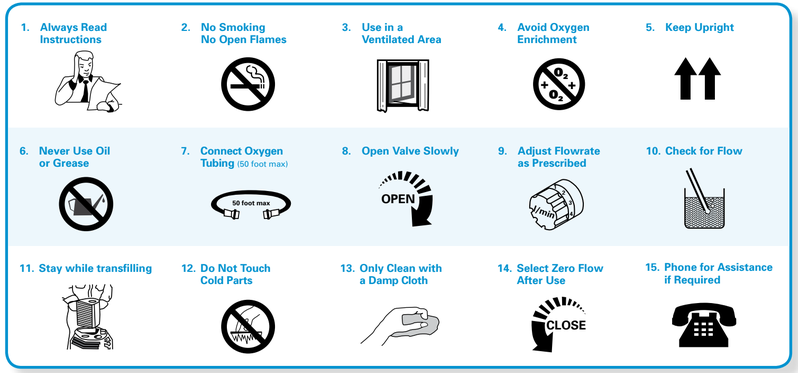
Reading the contents indicator on the liquid portable

Companion Model

> When using the portable, you must hold the shoulder strap directly above the gauge, right at the portable, and lift. Observe the reading
> If you hold the shoulder strap in the middle, it will not read the contents properly (needle in red area is near empty)

Caire Model

> Depress the push button on top of the unit for two seconds minimum. Read the illuminated dots to indicate the contents level (1/1 is full)
> If the Low Battery Indicator lights up when the button is depressed, the battery will require changing or replacement by VitalAire staff
> The portable will continue to supply oxygen even if the Low Battery Indicator lights up, as long as there is liquid oxygen in the unit



Portable Consumption Chart

** The following are estimates only; actual duration may vary.

Caire Model – Top and Side Fill Portable

Pressure	Estimated hours of use based on flow setting L/min										
	0.25	0.5	0.75	1	1.5	2	2.5	3	4	5	6
Full	62	31	20	15	10	7	6	5	4	3	2 ½
¾ Full	46	23	15	11	7	5	4	3 ¾	2 ¾	2 ¼	1 ¾
½ Full	31	15	10	7	5	3 ½	3	2 ½	1 ¾	1 ½	1 ¼
¼ Full	15	7	5	3	2	1 ¾	1 ½	1 ¼	1	¾	½

Caire Model – Top and Side Fill High Flow Portable

Pressure	Estimated hours of use based on flow setting L/min											
	OFF	.5	1.0	2.0	2.5	3.0	4.0	6.0	8.0	10.0	12.0	15.0
Full	71	32	16	8	6 ½	5 ½	4	2 ¾	2	1.8	1 ½	1
¾ Full	53	24	12	6	4 ½	4	4	2	1 ½	1	< ¾	< ¾
½ Full	35	16	8	4	3 ¼	2 ½	2	1 ½	1	<1	< ½	< ½
¼ Full	16	8	4	2	1 ¾	1¼	1	¾	½	< ½	< ¼	< ¼

Companion Model – Top Fill Portable

Pressure	Estimated hours of use based on flow setting L/min										
	0.25	0.5	0.75	1	1.5	2	2.5	3	4	5	6
Full	70	35	23	17	11	8 ½	7	5 ¾	4	3 ½	2 ¾
¾ Full	52 ½	26 ¼	17 ¼	12 ¾	8 ¼	6 ¼	5 ¼	4 ¼	3	2 ½	2
½ Full	35	17 ½	11 ½	8 ½	5 ½	4 ¼	3 ½	2 ¾	2	1 ¾	1 ¼
¼ Full	17 ½	8 ¾	5 ¾	4 ¼	2 ¾	2	1 ¾	1 ½	1	¾	½

Companion Model – Top Fill High Flow Portable

Pressure	Estimated hours of use based on flow setting L/min										
	.05	1	1.5	2	3	4	5	6	8	10	15
Full	21 ¾	13 ½	9 ¾	7 ½	5 ¼	4	3 ¼	2 ¾	2	1 ¾	1
¾ Full	16 ¼	10	7 ¼	5 ½	3 ¾	3	2 ½	2	1 ½	1 ¼	¾
½ Full	10 ¾	6 ¾	4 ¾	3 ¾	2 ½	2	1 ¾	1 ¼	1	¾	½
¼ Full	5 ¼	3 ¼	2 ¼	1 ¾	1 ¼	1	¾	< ¾	½	<½	¼