



ZEN-O LITE MAINTENANCE GUIDE

HEMOCARE PROVIDER



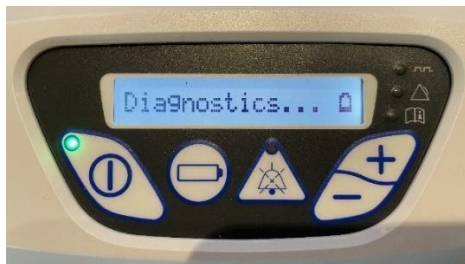
Zen-O^{lite}™

Testing Units

- Units returned from the field should be run in Test Mode for at least 1 hour at a setting of 5 pulse. To place the concentrator into Test Mode, connect unit to AC Power, ensure that it is turned on, and then hold down the “Alarm Mute” and the “Battery” buttons together for four (4) seconds until the display indicates “Test mode”. Note any error messages that are displayed on the screen during test period.



- The Zen-O Lite has an onboard oxygen analyzer that displays the oxygen purity of the device. To access the purity on the unit, hold the + and – setting buttons for 5 seconds. The screen will display “Diagnostics”. Push the – setting button one time and the first 3 numbers displayed in the screen is the oxygen purity of the device. The unit will display XX.X until the warm-up time period is complete. From “Diagnostics” push the + setting button to display the serial number of the unit, total run hours and sieve bed hours.



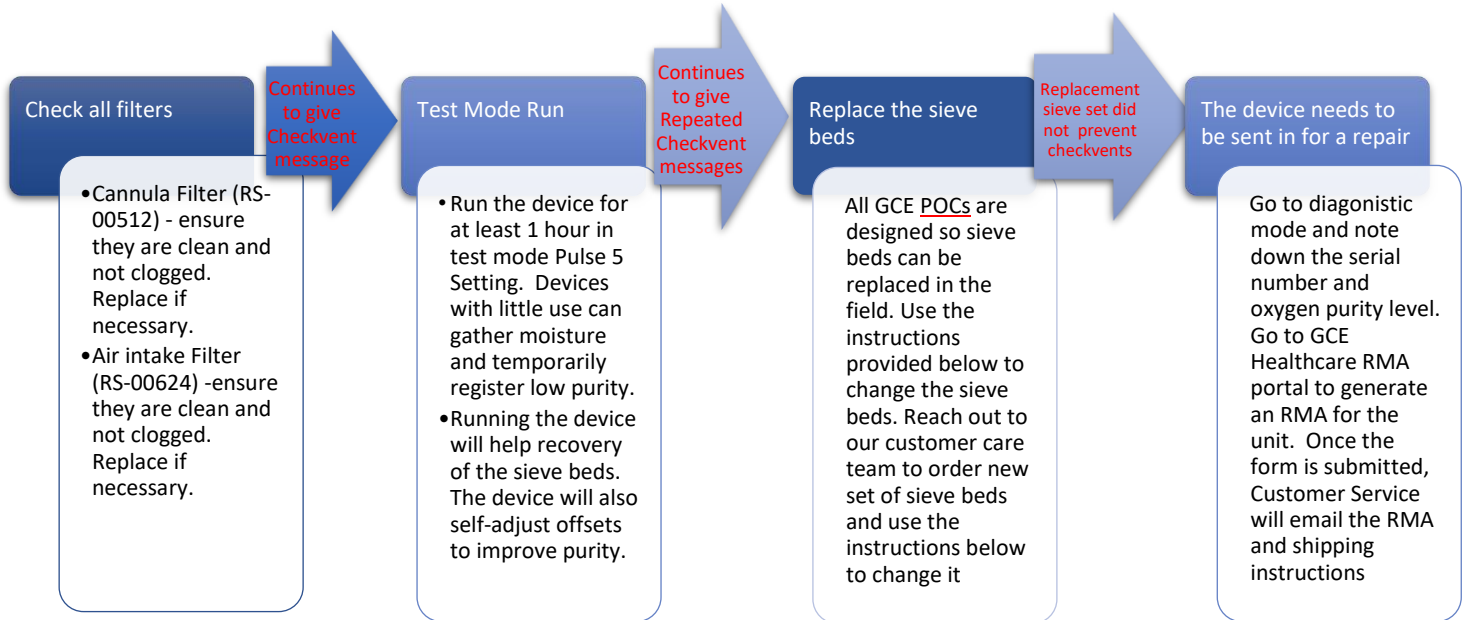
- Units that display a Service Code Error will need to come back to GCE Healthcare for repair. A list of the Service Codes is listed below. Move on to the RMA process.
- RMAs are generated through our online portal. The portal address is as follows:
<https://app.smartsheet.com/b/form/80aef6a226304389a5231c378de63b8d>

Service Codes for Zen-O and Zen-O Lite

Alarm Message	Possible Cause	Action
01: Service	Leak or obstruction in connection between compressor and Sieve assembly. Must be detected for multiple cycles.	Return for service
02: Service!	Main microcontroller cannot communicate to motor microcontroller.	Return for service
03: Service!	A pressure pulse is not detected while delivering a bolus to the patient.	Return for service
04: Service!	Possible leak in system.	Return for service
05: Service!	Internal unit temperature at the main PC board is greater than the maximum allowable value. Unit may have overheated due to high ambient conditions or cooling fan failure.	Allow unit to cool. Restart device. If alarm persists return for service.
07: Service!	Compressor motor is repeatedly stalling. Possible bad connection between compressor and main PC board.	Restart device. If alarm persists return for service.
09: Service!	At least one of the fans are not turning when commanded on. Possible defective fan or PC board connection.	Restart device. If alarm persists return for service.
11: Service!	Indicates flow meter readings are above expected possible range.	Restart device. If alarm persists return for service.
Check Vents	Low oxygen output detected. This alarm will automatically clear if oxygen levels return to acceptable (above 86%).	Ensure all air vents are clear and unobstructed. If alert persists, service required.
25: Service!	Indicates temperature sensor readings are outside of expected possible range. Default of 35 degrees Celsius is used in system performance calculations. Service is needed.	Ensure all air vents are clear and unobstructed. If alert persists, service required.
26: Service!	Indicates system voltage readings are above expected possible range. Default of 15 volts is used in system calculations.	Service Required
27: Service!	Indicates the internal oxygen sensor has failed. Low oxygen alarm cannot be detected, and oxygen feedback control cannot be performed.	Unit can be operated short term. Verify oxygen purity with external analyzer. If alarm persists return for service.
51: Service!	Watchdog circuit has reset the microprocessor.	Restart device. If alarm persists return for service.

57: Service!	Battery communications over internal IIC interface has timed out. System operates normally, but battery information is unavailable.	Restart device. If alarm persists return for service.
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Check Vent Alarm – If the unit displays Check Vent, follow the below steps:

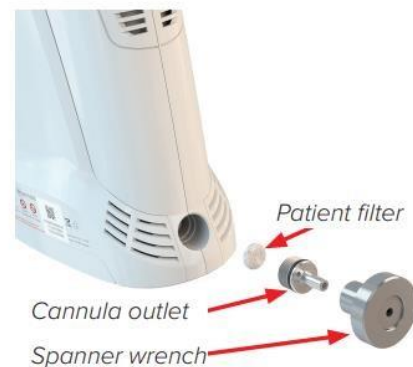


- Replacement sieve beds can be ordered from GCE Healthcare Customer Service by providing the serial number of the unit. Customer Service email address is: uscustsvc@gcegroup.com. Warranty replacement sieve beds are sent out at no charge. Zen-O Lite replacement sieve bed part number is RS-00616.

CHANGING FILTERS – ZEN-O LITE

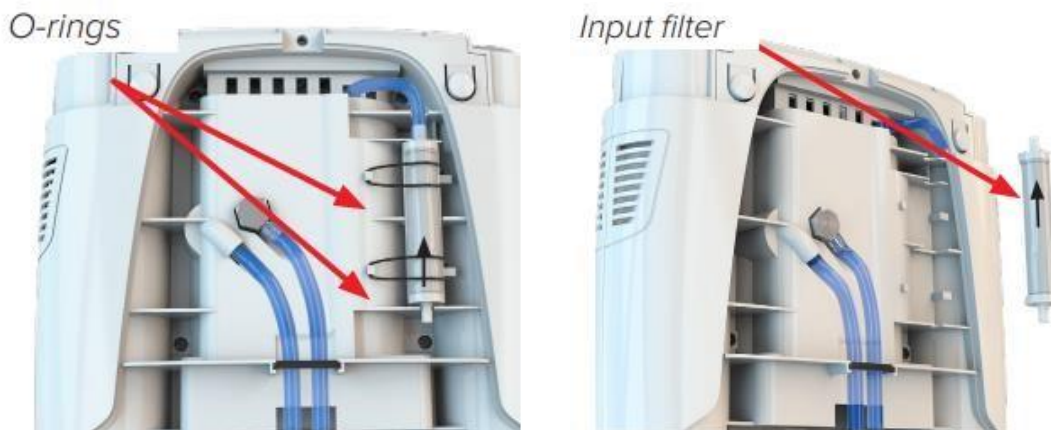
PATIENT FILTER

- The patient filter (RS-00512) is a serviceable filter and is directly behind the cannula outlet connection. A custom spanner wrench (part number RS-00617) is utilized to remove the cannula outlet connection. The spanner wrench is intended to be utilized by hand for the removal and installation of the cannula outlet.
- The patient cannula filter is changed as needed. GCE Healthcare recommends the cannula filter is replaced once a year. The manufacturer does not recommend that the patient filter should be changed between the patients.



COMPRESSOR INPUT FILTER

- The compressor input filter (RS-00624) is serviceable and is located under the front cover.
- Turn off the device and disconnect AC or DC power source (if connected).
- Remove the Top and Bottom cover and battery.
- The front cover can be removed by removing the screw located at the top center of the front cover with a 2mm Allen key driver.
- Slide the front cover down away from the top of the device and then off.
- Once the front cover is removed, next remove the two O-rings securing the filter to the enclosure.
- Finally, disconnect the tubing to the filter and remove it from the device. Reverse steps to install the new filter.
- Note the direction of filter placement - marked in the picture.



NOTE: Replacement filters may have a different design.

CAUTION: Do not over-tighten the fastener/screw , maximum torque 5in-lb.

The suggested change interval for the compressor input filter is 1 year or as needed.

SIEVE MAINTENANCE AND REPLACEMENT PROCEDURE

Zen-O lite is designed for easy in-field service of the sieve beds (service part number RS-00616) using readily available hand tools and without the need for any specialized test equipment.

In addition to normal self-diagnostics, a leak check following the replacement of the sieve beds must be performed to ensure proper replacement.

1. Turn off the device and disconnect AC or DC power source (if connected).
2. Remove the device from the carry bag.
3. Remove the battery from the device.
4. Press the four release buttons located at the top of the device to remove the top cover of the device
5. Use the tool included with the replacement sieve modules package to rotate the sieve counterclockwise 3 - 4 turns until it can be removed by pulling up towards the top of the device.



6. Repeat for the second sieve module.

7. Remove the replacement sieves from the packaging, remove the air plug on the sieve module and immediately install the replacement sieve module.

Caution: Do not leave the replacement sieve exposed.

8. Install the replacement sieve, with thread at the top of the device as shown in Fig. 10.

9. Hand tighten the sieve. 10. Use the tool to finish installing.

Sieve modules
replacement tool



CAUTION: Do not over-tighten!

11. Repeat steps 8 - 10 for the second replacement sieve.

12. Re-install the top cover to the device by pushing it down over the top of the device until the four buttons snap into place.

13. Re-insert the battery into the device.


14. Connect the device to an AC or DC power source.


DO NOT POWER ON!

15. Press the alarm mute  and battery buttons  simultaneously until the display shows "Leak Test".

a. The device will indicate progress by decimals right of the "Leak test" text.

b. When completed, the device will indicate "Test Passed" or "Test Failed".





i) Test Passed - Press the battery button  to exit, continue to step 16.

ii) Test Failed - Press battery button  to exit, then repeat steps 4-15.

16. If the leak test has passed, then clear the device sieve hour counter.

a. Turn on your Zen-O lite portable oxygen concentrator.

b. Simultaneously press the  and  buttons until "Diagnostics" is displayed.

- c. Press the  and  button to navigate the diagnostic menu until “XXXH Sieve” is displayed, where XXXX = number of hours for the old sieve was utilized.
- d. Press the alarm mute button  until the sieve hour counter shows “0H Sieve”.
- e. Press the battery button  to exit the diagnostic mode.
- f. Run the device for 1 hour in test mode and check that no ‘Check Vents’ messages occur.
- g. If needing to be returned to Repair center, the Purity reading can be taken after a Minimum ½ hour running time by entering Diagnostic Mode and pressing ‘ – ’ Key once and reading left side value.



Battery Management

- The Warranty for batteries and power accessories is 1 year.
- To check battery charge status, push the battery button one time. The unit will display current charge percentage.



- The Zen-O Lite displays the total charge cycles on a battery. To check total battery cycles, push the battery button twice. Batteries will degrade as the number of charge cycles increases. The lifespan of a battery is between 400-500 charge cycles.



- Encourage patients to charge the batteries as often as they can. Run the unit from the DC power plug in the car and keep unit plugged in to AC when home.
- Keep extra batteries at branches charged to 50%. Try to not let batteries fully discharge.