ZEROAIR
User's Manual

Manual updates

Version	Date	Description
1	10/03/11	First draft
2	20/03/11	Update on figure dimensions and installations
3	10/04/11	Update reference to INLET and OUTLET

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1 Introduction

This manual is intended to provide technical guidance on the installation, operation and maintenance of zero air generator. Do not attempt to install or operate this product without having fully read and understood the information presented. If you have questions, please contact your local supplier.


WARNING: Any misuse of this product will avoid the manufacturer's warranty

2 Product Description

This series of Zero Air Generators are systems which replace the use of inconvenient high pressure gas cylinders as a source of hydrocarbon-free air. Eliminate gas cylinders reduces annual operating costs of managing them and reduces the risk of possible injury to workers

- Zero Air Generator may be used as a source of fuel air for Flame Ionization Detectors (FID's) or as a zero reference for any instrument which measures hydrocarbon concentration.
- The zero air generator will remove HC pollutants to less than 0.05 ppm.
- This system is engineered to be easy to install, need a low and requires only minimal annual maintenance.

3 Safety instruction

Do not use the unit until the safety information and instructions in this guide have been read and understood. Using equipment in a manner not specified in this document may compromise the protection provided by the generator and could lead to an unplanned release of pressure, which may cause serious personal injury or damage.

- Read all instructions.
- Contact your supplier if you detect a problem that you cannot solve with this manual.
- This equipment is for internal use only. Do not use outdoors.
- The operator must employ safe working practices and rules when operating the Zero Air Generator.
- The owner is responsible for maintaining the unit in a safe operating condition.
- Always use approved parts when performing maintenance and repairs. Make sure that replacement parts meet or exceed the pressure requirements.

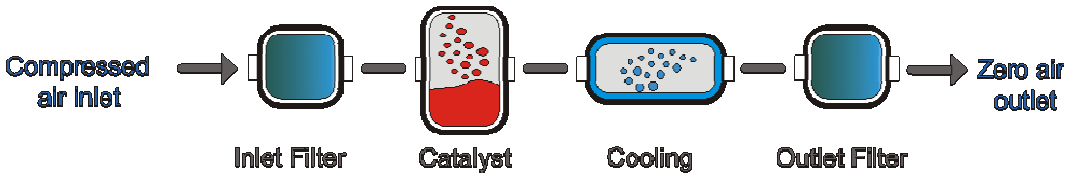
- Only authorized, trained and competent individuals must perform maintenance and repair.
- Completely depressurize the generator prior to performing any mechanical work, including changing the filters.
- Do not open the generator while the machine is operating.
- Care must be taken as burns can occur from touching hot parts.
- Do not operate equipment with a damaged cord or if the equipment has been dropped or damaged until it has been examined by a qualified serviceman.
- Let equipment cool completely before to move or close in a box
- To reduce the risk of fire, do not operate equipment in the vicinity of open containers of flammable liquids.

NOTE : It is no possible to anticipate every possible circumstance that may constitute a potential danger. The warnings in the manual cover potential dangers best known, but by definition can not be all-inclusive.

SAVE THESE INSTRUCTIONS

4 Engineered System

Basic diagram (Figure 1)



The system consist in 3 stage of filtration :

Fisrt Stage : high efficiency coalescing prefiltration, it removes liquids and particulate matter, from the incoming air supply, to 5 micron.

These filters are equipped with float drains which automatically open to empty any liquids from inside the filter housing. The drains are connected to 1/4" tubing which discharges to atmosphere

Second Stage : The catalyst module is a stainless steel vessel filled with catalyst and assembled with a cartridge heater controlled by temperature sensor and operates the catalyst bed at the required temperature for optimal oxidation. During operation, hydrocarbons are oxidized into carbon dioxide and water vapor.

Third Stage :

High-grade filter is used to remove 99.99% of particulates with size greater than 0.5 microns.

5 Air Supply

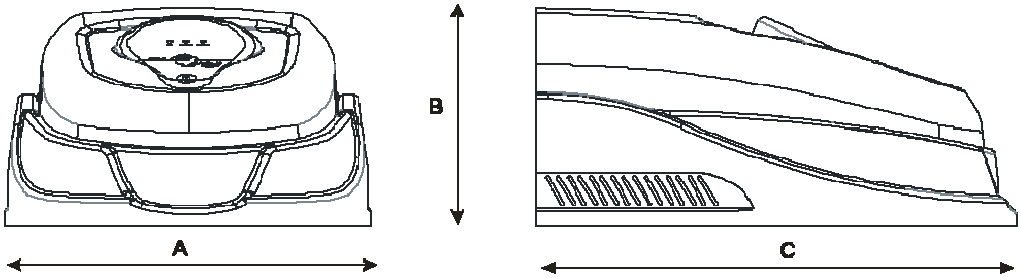
The Zero Air Generator requires a source of clean, dry compressed air (3 to 8 Bar) for optimal operation. The air should be as close to instrument quality as possible and supplied at a flow rate and pressure above those required at the point of use.

Air supplied to the Generator must be between 35°C (95°F) and 1°C (34°F) at dewpoint <-20°C. Air at temperatures higher or lower or to much wet than this may cause damage not covered by warranty.

The air should be relatively free of compressor oil, hydrocarbons, and particulate matter max 100ppm. Contamination of the catalyst bed may occur if it is exposed to certain compounds.

6 Dimensions and installation

6.1 Dimensions



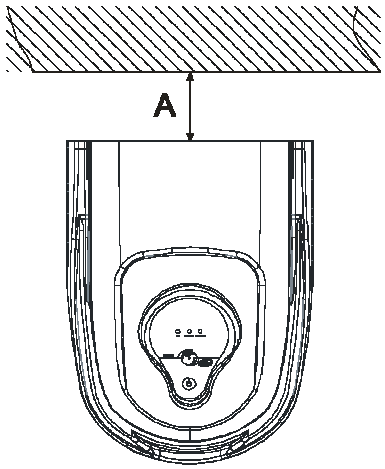
A = 34cm (13”)

B = 20cm (7.9”)

C = 43cm (16,9”)

6.2 Installation

Figure 2



A > 15cm (6”)

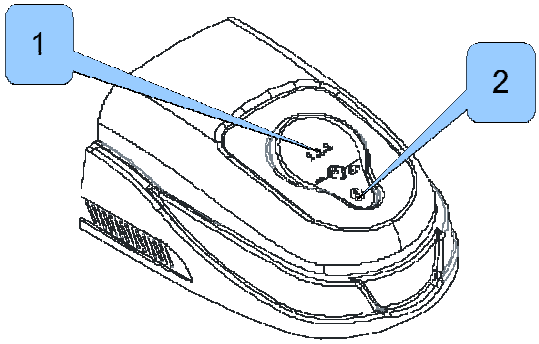
In order to ensure safe operation of the unit, the following steps must be taken prior to installation:

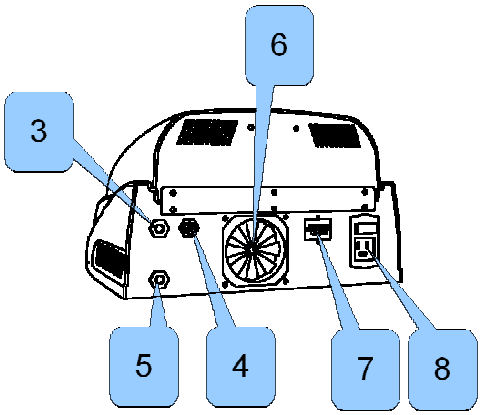
1. At least 6” (150 mm) clearance at the back for proper fan operation.
2. Adequate support for the weight (>10 kg.).
3. Access at the rear for making the pneumatic and electrical connections.

6.3 Overview and Connections

All connections, electric and pneumatic, are made at the back panel. Refer to follow Figure 3-4.

Front view (Figure 3) *Back view (Figure 4)*





	Description
1	Status leds
2	START/STOP Button
3	AIR outlet
4	Compress AIR inlet
5	WATER DRAIN purge
6	Cooling fan air (intake)
7	RS485 (optional)
8	Power Switch and power socket

Make the following pneumatic connections:

- AIR INLET (1/8” female pipe thread)
- AIR OUTLET (1/8” female pipe thread)

Keep this line as short as possible to minimize pressure drops

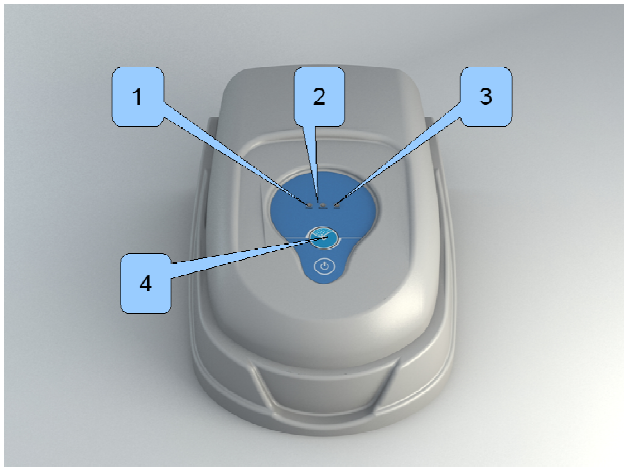
- WATER DRAIN Connect a 6mm(1/4”) diameter tubing to the water out fitting to avoid the occasional spurts of water on the instrument under. Connect the other end of the tubing to a drain or, alternatively, the water can be collected in a tray or bucket and dispersed by normal evaporation.

Make the following pneumatic connections

- POWER. Connect the power cord to the proper power source.
- COMMUNICATION : connect the communication cable to the control unit (if need)

7 User interface

Figure 6



The front panel has three LEDs : GREEN (1), YELLOW (2), RED(3) and a one button (4). Pressing START/STOP button (1) you can turn on or off / warming oven catalyst. The following table show the link between led's state and unit's state.

Status	Green Led(1)	Yellow Led(2)	Red Led(3)
STOP	ON	OFF	OFF
COOLING DOWN	FLASHING	OFF	OFF
WARMING UP	ON	FLASHING	OFF
READY	ON	ON	OFF
ALARM	X	X	FLASHING
CATALYST EXAUSTED	X	X	ON

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9 FID Models

The FID Models are without the top cover and it can be put under the H2 generator of the same product line. Once the special cable is connected between both the units the control of ZEROAIR module is transferred to the generator H2. The operator can control ZEROAIR unit by the H2 user interface.

10 Maintenance

All maintenance procedures should be performed by suitable personnel using reasonable care.

Prior to servicing Zero Air Generator, turn off the compressed air and power supplies to the generator, and ensure that the system is depressurized.

To ensure consistent product performance and reliability use only genuine Balston replacement parts and filter cartridges.

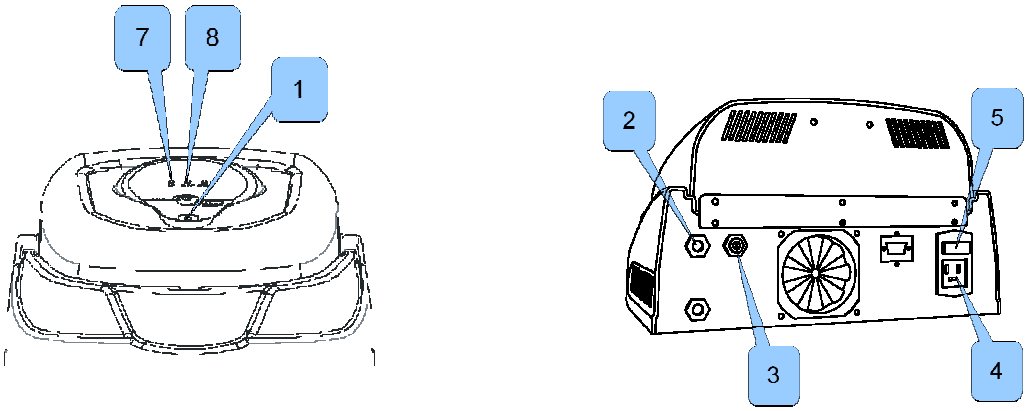
The primary maintenance tasks required are :

Operation	Interval	KIT parts ordering code
Changing the high efficiency coalescing prefilter cartridges	Every year	SP.ZA.FILTER
Changing the High-grade filter cartridges	Every year	SP.H2.WFILT.M
Replacing the catalyst oven	When the Red Led is solid on	SP.ZA.SKIT1 for 1,5 L/in SP.ZA.SKIT3 for 3,5 L/in SP.ZA.SKIT6 for 6,0 L/in

11 Quick Guide

11.1 First start-up

Figure 7



List of the operations to be performed for first start-up

- Connect the hose to the AIR inlet fitting (3).
- Connect the hose to the AIR outlet fitting (2)
- Connect the voltage wire to the power socket (4).
- Turn on the power switch (5).
- Start the internal oven heating pressing START/STOP button(1).
- Wait until the yellow LED will be solid(8)

11.2 Turning off the machine

List of the operations to be performed before turning off the back power switch

- Stop the internal oven heating pressing START/STOP button(6).

- Turn off the power switch (5).

11.3 Packaging

List of the operations to be performed before packing the machine to return it for maintenance service:

- Stop the internal oven heating pressing START/STOP button(1).
- Wait until Green led will be solid(7)
- Turn off the power switch (5).
- Disconnect the power cable from the voltage socket (4)
- Disconnect the AIR's hose from the feed fitting (2).
- Place the generator in its special packaging.

The generator contains Hot elements. Ensure that it is fully cooled prior to shipment or servicing.

Models	Z.-1500	ZA.FID.1500	ZA.3000	ZA.FID.3000	ZA.6000	ZA.FID.6000
Air outlet						
Flow rate (max)	1,5 l/min		3,0 l/min		6,0 l/min	
OUTLET pressure (min)	Pressure INLET – 0.5 Bar (8 psi) at maximum flow					
OUTLET pressure (max)	6.5 Bar(94 psi)					
Total hydrocarbon content	< 0.05ppm					
Startup time	40 min		45 min	45 min	50 min	50 min
Air inlet						
Max inlet hydrocarbon content	100ppm					
Min Supply Pressure	3 Bar (43psi)					
Max Supply Pressure	10 Bar (145 psi)					
Dewpoint	< -20°C					
Min Temperature	1°C (34°F)					
Max Temperature	35°C(95°F)					
Communication						
RS485	Option	X	Option	X	Option	X
General data						
Connection type	IC320-C13	4 pole connector	IC320-C13	4 pole connector	IC320-C13	4 pole connector
Supply voltage	90-240Vac 50/60Hz	24VDC ± 5%	90-240Vac 50/60Hz	24VDC ± 5%	90-240Vac 50/60Hz	24VDC ± 5%
Installation Power (max)	240W (280VA)					
Fuse Rating (230V) (110V)	2A (5x20mm)	Internal	2A (5x20mm)	Internal	2A (5x20mm)	internal
Dimensions	43x34x20(H) cm					

Net weight(water tank empty)	8Kg	9Kg
Connections		
Outlet port	1/8" Female	
Inlet port	1/8" Female	
Water purge	6mm(1/4) push fitting	
Ambient data		
Temperature	5-35℃ (41-95℉)	
Humidity (max, non condensing)	80% at 25℃ (77℉)	
Noise	<25dB(A)	
IP rating	IP20	

NOTE :