

Holland
Green
Science



20311001/20311002/20311003

Zephyrus Series
Diaphragm Pump

User Manual

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- The contents of the manual are subject to change without notice.
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Products sold by the Company are intended solely for the use(s) specified by the manufacturer and are not to be used for any other purposes including, but not limited to, unauthorized commercial purposes. Buyer warrants and represents that Buyer will properly test, use, qualify, and/or validate each Product for intended use, and, to the extent authorized, manufacture and market any final articles made from the Company’s Products in accordance with the practices of a reasonable person who is an expert in the field, and in strict compliance with all applicable national, state and local laws and regulations. Buyer acknowledges and understands that the purchase of Products only conveys to Buyer the non-transferable right for only the Buyer to use the Products purchased in compliance with the applicable manufacturer’s Published User Statement, Limited User Statement, or Limited License, if any. While this manual contains certain representations of the potential dangers from the instrument or equipment, Buyer is solely responsible for conducting any research necessary to learn the hazards involved for any of its intended uses of the instrument or equipment purchased from the Company and to properly warn its customers, employees and other personnel who may be exposed to such instrument or equipment of any risks involved in using or handling the instrument or equipment.

The Company warrants that this product will operate or perform substantially in conformance with the Company’s published specifications and be free from defects in material and workmanship, when subjected to normal, proper and intended storage and usage by properly trained personnel, for the duration of the manufacturer’s warranty period set forth in this product documentation, published specifications or package inserts. If a manufacturer’s warranty period is not specified in the product documentation, published specifications or package inserts, the warranty period shall be one (1) year from the date of Bill of Sale to Buyer for equipment, and the earlier of any stated expiration dates or ninety (90) days for all other products (the “Warranty Period”). The Company agrees during the Warranty Period, to repair or replace, at the Company’s option, defective Products so as to cause the same to operate in substantial conformance with said published specifications; provided that Buyer shall (a) promptly notify the Company in writing upon the discovery of any defect, which notice shall include the product model and serial number (if applicable) and details of the warranty claim; and (b) after the Company’s review, the Company will provide Buyer with service data and/or a Return Material Authorization (“RMA”), which may include biohazard decontamination procedures and other product-specific handling instructions, then, if applicable,

Buyer may return the defective Products to the Company with all costs prepaid by Buyer. Replacement parts may be new or refurbished, at the election of the Company. All replaced parts shall become the property of the Company. Shipment to Buyer of repaired or replacement Products shall be made in accordance with the Delivery provisions of the Terms & Conditions agreed to by the purchase of this product. Consumables are expressly excluded from this warranty.

Notwithstanding the foregoing, Products supplied by the Company but not manufactured by the Company are not warranted by the Company, and the Company disclaims all warranties associated with the accuracy of any original manufacturer or third-party supplier Product information, but the Company agrees to assign to Buyer any warranty rights in such Product that the Company may have from the original manufacturer or third-party supplier, to the extent such assignment is allowed by such original manufacturer or third-party supplier.

In no event shall the Company have any obligation to make repairs, replacements or corrections required, in whole or in part, as the result of (i) normal wear and tear, (ii) accident, disaster or event of force majeure, (iii) misuse, fault or negligence of or by Buyer, (iv) use of the Product in a manner for which they were not designed, (v) causes external to the Product such as, but not limited to, power failure or electrical power surges, (vi) improper storage and handling of the Product or (vii) use of the Product in combination with equipment or software not supplied by the Company. If the Company determines that Product for which Buyer has requested warranty services are not covered by the warranty hereunder, Buyer shall pay or reimburse the Company for all costs of investigating and responding to such request at the Company's then prevailing time and materials rates. If the Company provides repair services or replacement parts that are not covered by this warranty, Buyer shall pay the Company therefor at the Company's then prevailing time and materials rates.

Any installation, maintenance, repair, service, relocation or alteration to or of, or other tampering with, the product performed by any person or entity other than the company without the company's prior written approval, or any use of replacement parts not supplied by the company, shall immediately void and cancel all warranties with respect to the product.

The obligations created by this warranty statement to repair or replace a defective product shall be the sole remedy of buyer in the event of a defective product. Except as expressly provided in this warranty statement, the company disclaims all other warranties, whether express or implied, oral or written, with respect to the products, including without limitation all implied warranties of merchantability or fitness for any particular purpose or use. The company does not warrant that the products are error-free or will accomplish any particular result.

Nothing in this manual or in the terms and agreement agreed to at the time of purchase shall be construed to provide for the transfer, assignment or alienation of the limited warranties provided by the company herein to any other party other than buyer, including but not limited to, successors, heirs, subsidiaries or any other third person.

The warranties identified above are the sole and exclusive warranties with respect to this product and are in lieu of all other warranties, express or implied. All other warranties are expressly disclaimed, including, without limitation, those of non-infringement, merchantability, or fitness for a specific purpose or use (whether arising from statute, or otherwise in law, or from a course of dealing, or usage of trade). This warranty is not transferable from the original purchaser to a subsequent owner. Further, the company is not liable in cases of deliberate, negligent or accidental misuse of the products, use with inappropriate reagents or consumables, damage caused by disaster, repair or modifications done by anyone other than the company. The company does not warrant that the product will not infringe the intellectual property rights of a third party either alone or in combination with other products or in the operation of any process. The company's total liability for breach of these warranties shall be limited to the gross purchase price for the product as stated in the relevant invoice or order under which the activity giving rise to liability arises. Under no circumstances shall the company be liable for indirect, incidental, consequential, special or punitive damages (including loss of business or profits) under any theory of liability hereunder.

For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim.

LIMITATION OF LIABILITY

Notwithstanding anything to the contrary contained herein, the liability of the company under these terms and conditions (whether by reason of breach of contract, tort, indemnification, or otherwise, but excluding liability of the company for breach of warranty (the sole remedy for which shall be as provided under this section) shall not exceed an amount equal to the lesser of (a) the total purchase price theretofore paid by buyer to the company with respect to the product(s) giving rise to such liability or (b) one hundred thousand dollars (\$100,000), whichever is less.

With respect to any software products incorporated in or forming a part of the Product hereunder Buyer intends and agrees that such software products are being licensed and not sold, and that the words "purchase", "sell" or similar or derivative words are understood and agreed to mean "license", and that the word "Buyer" or similar or derivative words are understood and agreed to mean "licensee". Notwithstanding anything to the contrary contained herein, The COMPANY or its licensor, as the case may be, retains all rights and interest in software products provided hereunder. See the Terms & Conditions of purchase for details regarding such license.

II. Safety



IMPORTANT Safety Items to be Observed.

Safety Warnings

! Dangerous (may result in serious loss of property or casualties)

1. The instrument must be grounded and away from sources of electromagnetic interference.
2. Before use, please confirm the voltage and frequency of the power supply match the instruments' nameplate voltage requirements
3. The instrument should be operated via a separate power outlet.
4. When the instrument is not in use, turn 'OFF' the power switch and unplug the power plug.
5. Do not alter, cut or shorten the instrument's power cord.
6. Do not repair the instrument without proper authorization, only a qualified or accredited service technician should conduct repairs.

! Warning (may cause property damage or personal injury)

7. Please fully read and understand all the user manual instructions prior to operation.
8. When unplugging the power plug, do not pull on the power cord directly.
9. Prior to all the below activities, the instruments power plug must be 'unplugged':
 - 9.1 When replacing the fuse
 - 9.2 Instrument failure
 - 9.3 Instrument not in use for long periods
 - 9.4 When moving or relocating the instrument

! Attention (may affect performance or service life)

10. The instrument should be placed on a stable, hard, and level surface.
11. The instrument requires adequate ventilation and operating space.
12. The instrument must be used in accordance with the correct settings as outlined within this user manual.
13. Only accredited and qualified professional repair technicians can open the instrument or conduct require repairs. Persons performing repairs on the instrument other than those selected or approved by the Company shall operate to void any warranty contained hereinabove for the product.

III. Zephyrus Series Diaphragm Pump – Introduction

The Zephyrus series diaphragm pump is constructed using polytetrafluoroethylene (PTFE) making it corrosion resistant and ideal for processing corrosive gases commonly used by the pharmaceutical and petrochemical industries. It is specifically designed to easily work in environments where suction filtration, vacuum distillation, rotary evaporation, vacuum concentration, centrifugal concentration, solid-phase extraction, and the like are required.

3.1 Main Features

3.1.1 Strong Chemical Corrosion Resistance

The Zephyrus series corrosion-resistant pump uses a PTFE to coat all surfaces that are in contact with the processed gas/liquids. These include the specially designed PTFE coated diaphragm and pump head, joint fixtures, and pipelines. Additionally, all electrical components and chassis are also solid PTFE or PTFE coated.

3.1.2 Non-Polluting and Maintenance Free

The Zephyrus series diaphragm pump can completely recover and separate solvents used in the processing, thereby eliminating environmental pollution. The Zephyrus series diaphragm pumps are water/oil-free dry pumps and are ideal for use in “clean rooms” and low noise environments. The pumps are designed for very low maintenance.

3.1.3 Low Noise and Low Vibration

The Zephyrus series diaphragm pumps use a direct drive power transmission plus a low noise diaphragm that operates at or below 70 decibels.

3.1.4 Overheat Protection

The Zephyrus series diaphragm pumps are equipped with thermal protection sensors that stop processing if excessive heating occurs. The process will automatically be restarted after the system cools.

3.2 Proper Use

The Zephyrus series is designed for non-residential use e.g. in schools, laboratories, or factories, and to be used in conjunction only with accessories recommended within this manual and by the manufacturer

3.3 After Sales Support

If problems are encountered or technical assistance support is required, when installing or using the instrument, please immediately contact ServiceEurope@hollandgreenscience.com. The company may provide technical assistance and information regarding the instrument or equipment or service without charge at its sole discretion. Buyer assumes sole responsibility for any reliance on or use of such assistance and information, and the company makes no warranty thereon.

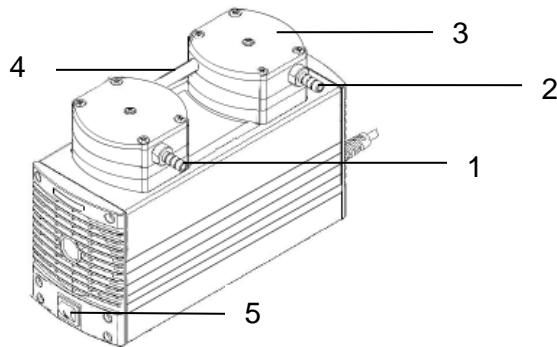
Upon contact the following information is required to be provided:

- Product serial number (located on rear panel instrument nameplate)
- Warranty card
- Description of issue or problem (i.e., software or hardware)
- Method and or operating steps you have undertaken towards resolution.
- Your contact details inclusive of telephone number and email address.

For claims under the warranty please contact your local supplier. You may also send the instrument directly to manufacturer, enclosing the invoice copy and by giving reasons for the claim. Prior to returning any pump for service or maintenance, it is mandatory to provide information if the pump has been contaminated and if so, what pollutants or hazardous substances may be existing within the pump. Without this required statement provided in advance to the receiving service team, the pump will be declined by receiving and returned to the sender.

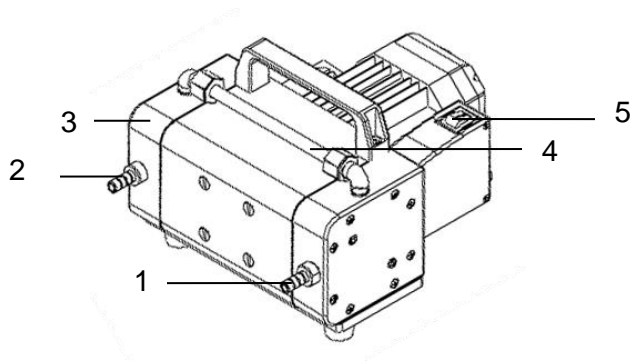
IV. Zephyrus Series Diaphragm Pump Overview

4.1 Zephyrus Mini Diaphragm Pump



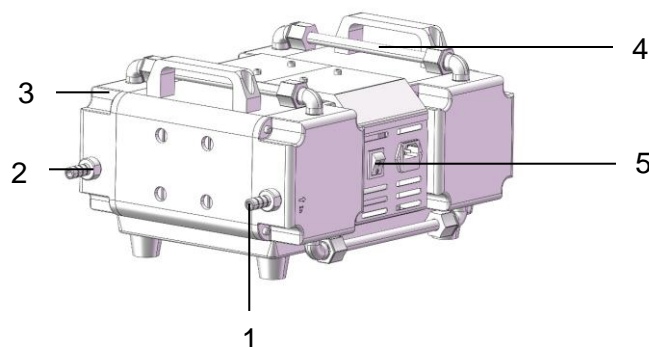
1. Suction Side
2. Discharge Side
3. Working Pump Body
4. Connection Pipe
5. Power Switch

4.2 Zephyrus Diaphragm Pump



1. Suction Side
2. Discharge Side
3. Working Pump Body
4. Connection Pipe
5. Power Switch

4.3 Zephyrus Max Diaphragm Pump



1. Suction Side
2. Discharge Side
3. Working Pump Body
4. Connection Pipe
5. Power Switch

V. Technical Specifications

Product Name	Zephyrus Mini	Zephyrus	Zephyrus Max
Model	20311001	20311002	20311003
Rated Voltage / Frequency	220 V±10%/50 Hz		
rated power	240 W	400 W	400 W
Pump Head Type	Ultimate Vacuum, Two-Stage Pump		
Ultimate Vacuum	6~8 mbar		
Maximum Operating Pressure	1 bar		
Maximum Flow	40 L/min	65 L/min	130L/min
Interface Specification	10 mm		12 mm
Medium and Ambient Temperature	5 °C ~ 40 °C		
Relative Humidity	<80%		
Pump Head Material	PTFE Composite Diaphragm Material		
Valve Material	FFPM		
Work System	Continuously Working		
Noise (dB)	<70		<80
Dimensions (L × W × H)mm	330x170x210	360x295x225	300 × 415 × 225

VI. Standards and Conformity

Construction in Accordance with the following Safety Standards:

EN 61010-1:2101+A1:2019

EN 61326-1:2013

EN IEC 61000-3-2:2019

EN IEC 61000-3-3-2013+A1:2019

VII. Inspection

7.1 Packing List

Unpack the equipment carefully and check for any damage which may have arisen during transport. In the event of identified damage, please contact ServiceEurope@hollandgreenscience.com.

- Carefully unpack the shipping container.
- Remove the diaphragm pump and place it onto a clean, level surface/bench.
- Check the instrument and accessories against the below 'Packing List'.

If the instrument or accessories are found to be incorrect, or the accessories are incomplete or abnormal, please contact ServiceEurope@hollandgreenscience.com.

The package includes the following items:

Item Description.	Quantity.
Diaphragm Pump	1
Power Cord	1
Quick Setup Card	1



Note:

If you find any visible damage to the product, please do not connect the product to the power supply.

VIII Installation instructions

8.1 Unpacking inspection

- Carefully unpack the shipping container.
- Remove the diaphragm pump and accessories and make sure everything on the packing list is included. If anything is missing or damaged, please contact the service department as soon as possible to order a replacement.

8.2 Installation

- The diaphragm pump and the accessories should be kept indoors and in a room-temperature environment.
- The diaphragm pump's motor is air-cooled, and it should only be operated in a well-ventilated area to ensure sufficient cooling air is available.
- The required AC line voltage and power usage are listed on the pump's nameplate. Make sure that the external power line voltage agrees with that listed on the pump's nameplate.
- The diaphragm pump should always be kept in a dry environment and no water should ever be sprayed or poured directly on the diaphragm pump.
- Only high-pressure hoses should be connected to the discharge outlet port of the diaphragm pump. Note that the hose connected to the pump's discharge outlet port will be at a relatively high point, and this will allow liquid to flow away from the port and prevent backflow and clogging.

IX Operating Instructions

- After properly assembling the Zephyrus series diaphragm pump, connect the electrical power cord to the wall outlet and turn the power switch to 'ON'.
- After any processing is completed, open the vacuum seal (break vacuum) and continue to run the vacuum pump for at least two minutes. This will help extend the life of the pump by eliminating processing residuals.

Note:

- a. When vacuum pump is being used the exhaust port must not be blocked.
- b. Do not transport the pump unless empty.
- c. This equipment is not considered safe for use in areas that are 'Hazard Free'. This is due to the potential for fire and/or explosion if volatile chemicals are in use.
- d. It is not recommended that highly flammable or explosive chemicals be used in the processing due to the possibility of combustion.
- e. The suction port of the pump should never be connected to any high-pressure sources such as pressurized argon or nitrogen tanks.
- f. If the Zephyrus series diaphragm pump fails to power on after being properly connected to the wall outlet, turn the power switch to 'OFF' and then 'ON'. If the pump does not work after repeating this 'OFF'/'ON' switching please contact a qualified service technician.

X. Fault Diagnosis

Problems	Possible Causes	Possible Solution
No power	The instrument is not connected to a power supply	Check that the power supply and connection are correct and the power is switched 'ON'.
	Fuse has blown or wall circuit breaker tripped	Open the base plate and check the power fuse and replace it if necessary. Reset circuit breaker(external).
	Pump is overheated	Allow the pump to cool and determine the cause of the overheating.
The pump runs but does not create a vacuum	Connection line blockage	Remove blockage in the connection line.
	The connected valve is closed, or the filter is blocked	Check all valves and filter connections.
	Excess condensation in the pump head	After the pump is relieved of vacuum, continue to run the pump for ~ 5 minutes and restart the process
	Composite diaphragm and valve plate contamination has occurred	Clean or replace the composite diaphragm and valve plate.
System leaks or fails to reach the ultimate vacuum	The pipe is improperly connected or cracked	Check pipe connections
	Pipe leakage	Replacement of pipes is recommended
	The pump head has condensed liquid	After the pump is relieved of vacuum, continue to run for about 5 minutes (note that condensed liquid will then be collected at the pump exhaust outlet)
	Composite diaphragm and valve plate contamination is present	Clean or replace the composite diaphragm and valve plate

XI. Maintenance and Cleaning

Proper maintenance and operation of the vacuum pump are recommended to extend the pump's service life.

The Zephyrus series diaphragm pump should be stored in a dry ventilated area.

The inlet and outlet port connections of the pump must be sealed with special corrosion-resistant glue.

It is recommended that the Zephyrus series diaphragm pump be stored in a dry and clean area after routine operations.

The external surface of the Zephyrus series diaphragm pump should be cleaned after the power is disconnected using a non-abrasive cleanser.

If liquid or moist solids enter the instrument, immediately disconnect the power supply and contact the service department for assistance.

- Minor surface stains (e.g., coffee spills) should be cleaned using a soft rag and mild detergent.
- Do not allow any form of cleaning solution to seep or flow into the instrument.
- The system power must be disconnected before any maintenance or cleaning occurs. Only use the recommended methods described above to clean the Zephyrus series diaphragm pump.

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