

Geopump Peristaltic Pump

Installation and Operation Manual



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DOCUMENTATION CONVENTIONS

This document uses the following conventions to present information:



WARNING

An exclamation point icon indicates a **WARNING** of a situation or condition that could lead to personal injury or death. You should not proceed until you read and thoroughly understand the **WARNING** message.



CAUTION

A raised hand icon indicates **CAUTION** information that relates to a situation or condition that could lead to equipment malfunction or damage. You should not proceed until you read and thoroughly understand the **CAUTION** message.



NOTE

A note icon indicates **NOTE** information. Notes provide additional or supplementary information about an activity or concept.

NOTICES



In order to ensure your Geopump has a long service life and operates properly, adhere to the following cautions and read this manual before use.

- **Disconnect from power source when not in use.**
- **Power input source must not exceed maximum ratings.**
- **Equipment must be wired to a negative ground system.**
- **Equipment may not operate properly with excess wiring not supplied by manufacturer.**
- **Avoid spraying fluid directly at equipment.**
- **Never submerge equipment.**
- **Avoid pulling on wires to unplug equipment wiring.**
- **Avoid using equipment with obvious physical damage.**
- **To prevent equipment damage, avoid dropping it.**

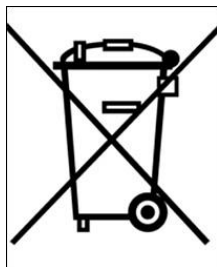


The Geotech Geopump Peristaltic Pump cannot be made dangerous or unsafe as a result of failure due to EMC interference.



WARNING

Do not operate this equipment if it has visible signs of significant physical damage other than normal wear and tear.



Notice for consumers in Europe:

This symbol indicates that this product is to be collected separately.

The following applies only to users in European countries:

- This product is designated for separate collection at an appropriate collection point. Do not dispose of as household waste.
- For more information, contact the seller or the local authorities in charge of waste management.

Section 1: System Description

Function and Theory

The Geotech GeoPump™ is a portable, peristaltic-style pump, engineered for collecting shallow groundwater and surface water samples. The pump is designed to operate seamlessly on both 12V DC or 120VAC power sources, making it an ideal tool for fieldwork and equally efficient for lab applications. The GeoPump's unique design prioritizes sample integrity, significantly reducing the risk of cross-contamination. Fluids being sampled interact exclusively with the tubing and not the pump mechanism, effectively eliminating the need for decontamination of pump components between sampling points.

A peristaltic pump operates on the principle of peristalsis. At the pump head, there's a flexible hose and a series of rollers. When the pump is turned on, these rollers rotate. As a roller moves along the tube, it compresses it. This action creates a vacuum, which draws the fluid into the tube. As the roller continues its path along the tube, it pushes the fluid in front of it, effectively creating pressure through the effluent end of the pump head. Once the roller passes, the tube returns to its original shape, ready for the next batch of fluid. This process repeats with each rotation, allowing the pump to move fluids continuously. The only part of the pump that the fluid touches is the inside of the tube, making it easy to clean and maintain, and ideal for tasks where preventing cross-contamination is crucial. The pump's speed can be adjusted to control the flow rate, making peristaltic pumps versatile tools in a wide range of applications. Additionally, the pump includes a speed direction switch allowing for back flushing.

System Components

SERIES I Peristaltic Pumps

Peristaltic pumps are available in AC only, DC only, or AC/DC combination power cord options. DC options can be hardwired or removable, whereas the AC power cord option is removable only. These units have one pumping station, which can also be piggybacked for multi-station pumping. The variable speed range is from 60 RPM to 350 RPM.

SERIES II Peristaltic Pumps

Peristaltic pumps are available in AC only, DC only, or AC/DC combination power cord options. DC options can be hardwired or removable, whereas the AC power cord option is removable only. These units have two pumping stations, which can also be piggybacked for multi-station pumping. The first pumping station is rated at 30 RPM to 300 RPM and the second station at 60 RPM to 600 RPM. Each pumping station works in conjunction with the other.

Section 2: System Installation

Standard Pump Head Instructions

1. Separate the pump halves. Hold the pump head as shown with the rollers in the 2, 6, and 10 o'clock positions and the rotor shaft facing down.



2. Place the tubing around the rollers.



3. Turn rotor counterclockwise until tubing completely surrounds the rotor.
4. The tubing is now in place. Next, position other pump half onto the motor shaft and snap shut. Be careful not to pinch tubing between plastic halves.



Easy-Load II Pump Head Instructions

1. Attach the Easy-Load II pump to the Geopump with the screws provided.
2. Set the lever to the left to open the pump. Place the tubing left to right.



Section 3: System Operation

The Geopump arrives packed in a hard-shell peristaltic pump carry case with the pump head properly attached to the pump (purchased separately). See *Section 8: Parts and Accessories* additional parts.

To place the pump into service:

1. Remove the pump from the case and verify the pump is switched to "OFF".
2. For AC/DC combination units, plug in the appropriate power cord into the outlet in the back of the pump and the other end of the power cord into the power source.
3. Insert the tubing into the pump head.
4. Put one end of the tubing into the sample source (well, river, ditch, lagoon, etc.) and the other end into the sample container.
5. Determine the desired direction of flow and set the toggle switch for the flow direction.
6. Turn the pump "ON".
7. Once pumping has begun, the speed dial can be adjusted to increase or reduce the fluid pumping speed as needed.

Section 4: System Maintenance

The Geopump has a strong reputation for durability and being virtually maintenance free. The following maintenance steps will assure your pump's long-term reliability:

Pump Tubing:

Depending on the pump head design, different sizes of tubing may be used. Use of incorrect tubing, size, or type, will cause damage to the pump and/or the pump head and void the warranty. Geotech recommends tubing be replaced regularly for optimum performance. Using the proper size and type of tubing for the pump head is essential. If you are unsure of the tubing type for your application, please call Geotech.

Pump:

Keep your Geopump clean and dry. In the event that the Geopump is subjected to significant splashing or immersion, discontinue use and wipe the unit down immediately with a clean, dry cloth.

To keep the Geopump reliable follow these simple guidelines:

- Do not drop Geopump.
- Do not immerse Geopump.
- Do not subject Geopump to poor power supplies.
- Do not subject Geopump to extreme heat or cold when in use.

Power Cords:

Always replace a kinked or damaged power cord. Replacement power cords are available for AD/DC combination units. Units with a hard-wired DC power cord are to be sent back to Geotech for proper repair. Refer to the Geotech Warranty and Repair page in the back of this manual.

Pump Head:

Clean the Geopump pump head periodically using a phosphate-free cleaning detergent and water solution.

Section 5: System Troubleshooting

Problem: Unit will not turn on.

Solution:

1. No power to unit: (rollers not moving):
 - Check power source and compatibility.
 - Check connections.
2. Speed control not set fast enough to overcome tubing resistance:
 - Check speed setting; if too low turn it up.
3. Check tubing size and type. Make sure it is the correct size and type for the pump head.
4. Check circuit breaker; if tripped press it in to reset.

Problem: Unit turns on, but not pumping (pump head rollers are moving).

Solution:

1. Verify fluid level in well (max suction lift unit can pump from is 27 feet (8m) below ground at sea level).
2. Water level is below down well tubing intake. Increase tubing length.
3. If using a combination of flexible and rigid tubing, check connection between tubing. A poor connection may cause a vacuum leak. Secure tubing connection.
4. Flexible tubing in pump head compromised or worn out:
 - Replace flexible tubing regularly.
5. Obstruction in tubing:
 - Check for clogs and kinks.
 - Clear any obstructions.
6. Using incorrect tubing type for pump head:
 - Tubing may have collapsed.
 - Replace with proper tubing type.

Problem: Pump head rollers are not moving .

Solution:

1. Pump head is loose from the pump housing:
 - Tighten pump head screws to engage pump head to gear.
 - Possible internal damage, call Geotech for consultation.

Problem: Pump not spinning, unit has power.

Solution:

1. Open pump head, rotate pump by hand. Turn speed all the way up. Make sure direction switch is either forward or reverse. Close pump head, cycle power on/off.

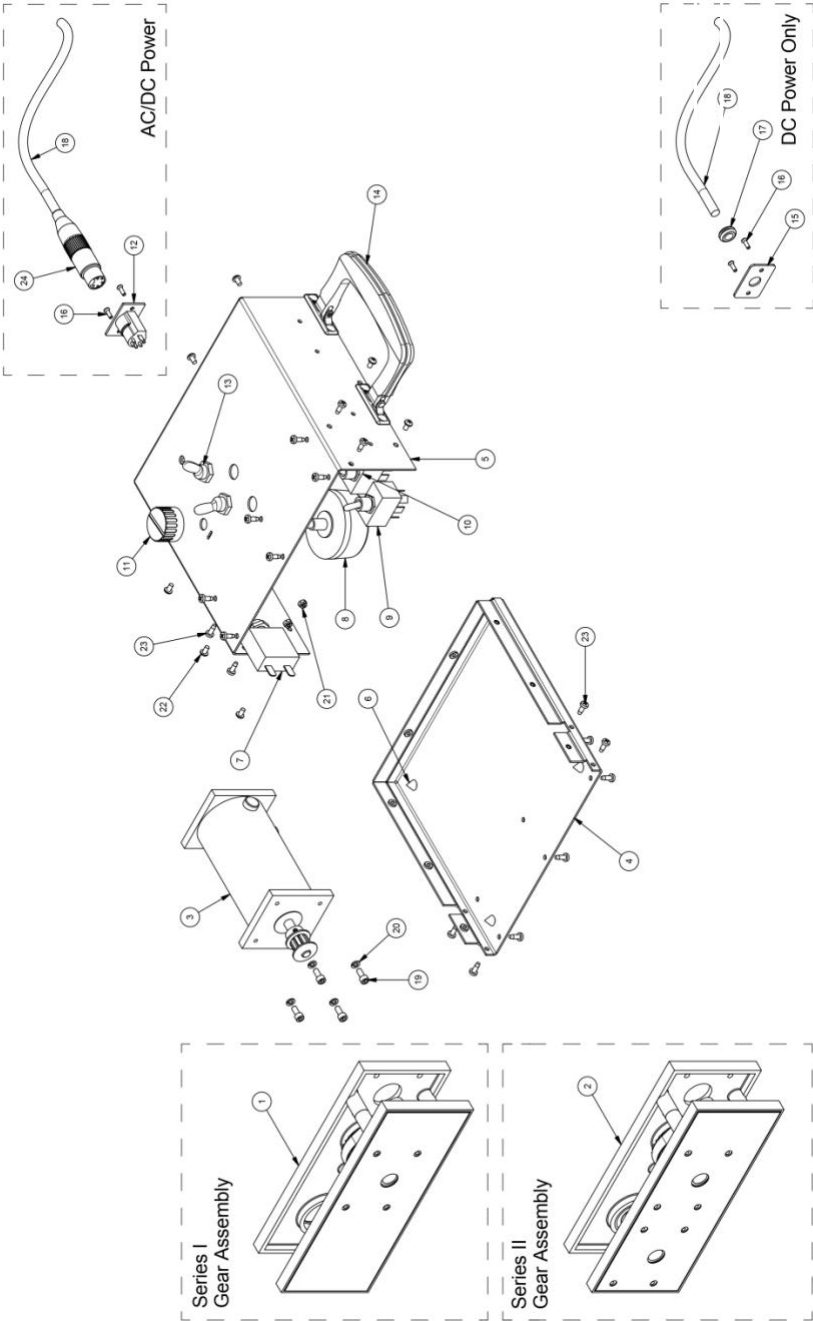
Section 6: System Specifications

Operating range	27' (8m) (at sea level)
Principle of Operation	Mechanical peristalsis
Dimensions	3.5 x 8 x 8 inches (9 x 20 x 20cm)
Power source (DC)	Any rated external 12-18 VDC @ 70 Watts
Power source (AC)	90-260 VAC, 47-65 Hz
Nominal operating current	3 amps DC
Over current Protection	5 amps DC
Power cord	12 VDC cord
Range of speed: Series I	60 to 350 RPM
Range of speed: Series II	First pumping station 30 to 300 RPM Second pumping station 60 to 600 RPM
Speed control	Step-less variable speed control
Liquid delivery rate	1.67 ml per revolution (for size 15 tubing)
Pumping options	Pressure or vacuum (reversible flow)
Pump head rotor	Cold rolled steel

OPTIONS

Models:	Geopump 1, Geopump 2
Tubing:	Silicone, Tygon, Viton, C-Flex
Pump Heads:	Standard, Easy-load II

Section 7: System Schematics



Section 8: Parts and Accessories

Schematic Parts Listing (Section 7)

Item	QTY	Part Number	Part Description
1	1	51350001	Assy, Gear Housing, Series I
2	1	51350002	Assy, Gear Housing, Series II
3	1	51350003	Assy, Motor, PP
4	1	51350012	Assy, Housing, Bottom, PP
5	1	51350023	Housing, Top, Silk Screened
6	4	17500042	Foot, RBR, 9/32" Hole Dia
7	1	11350005	Breaker, Thermal, 5amp, Circuit 250V
8	1	51350011	Assy, Rheostat
9	1	11350020	Switch, Toggle, Dpdt, Frwd/Rvrs
10	1	11350021	Switch, Toggle, Dpst, On/Off
11	1	11350010	Knob, Plastic, Rheostat
12	1	51350033	Assy, Wiring Harness, PP
13	2	17500037	Boot, RBR, Toggle Switch, Grey
14	1	11350009	Handle, PE, NI
15	1	11350015	Plate, AL, 1.5x1.5, Hardwire, Cord, Painted
16	2	00114	Screw, SS8, 4-40x3/8", FHD
17	1	11350019	Grommet, RBR, 5/16x1/2", 1/4" Thick Hole
18	1	17500040	Cord, SJOW, DC Power, 18-2
19	4	17500366	Screw, SS8, 8-32x3/8", SHCS
20	4	17200081	Washer, SS8, #8, Lock
21	2	17200046	Nut, Hex, 4-40, Nyloc
22	8	17200078	Screw, SS8, 6-32x.25", PNH, M/S
23	20	17200077	Screw, SS8, 6x3/8", PNH, TEK Self Drilling
24	1	17200012	Connector, AMP, Fem W/Strain Relief

Additional Parts Listing

Part Number	Part Description
17500035	Adapter, Cigarette to Clips
17500036	Adapter, Cigarette Lighter, Red LED
51350030	Power Supply, AC Adapter, PP, 18V, 70W, CE
57500008	Assy, Power Cord, DC w/Amp
51350015	Case, Peristaltic Pump with foam
51350026	Faceplate, Gear, Hsng, Series II, Painted
51350025	Faceplate, Gear, Hsng, Series I, Painted
17200079	Screw, SS8, 8-32x1.25", Fillister, Peristaltic Pump
17200199	Screw, ZNC, 6-32x2.5", Thumb, Peristaltic Pump
71350030	Screw, SS8, 8-32x3", Phi

Old Style Non-CE Parts

Part Number	Part Description
57500007	Assy, Power Cord, AC, w/Amp
51350007	Assy, Diode, PP
57500009	Assy, Rectifier Bridge, PP-Logic
51350013	Assy, Transformer w/Jumper, PP
51350004	Assy, Wiring Harness, PP

Revision History		
Project #	Description	Date
-	Previous Release	7/14/2011
-	Update Declaration of Conformity to include header, SP	3/3/2015
1452	Removable DC cords, minor formatting edits. - StellarR	3/31/2017
2281	Updated CE Document. Removed Spanish Address – AH Added PN 17500036 – GR	6/16/2023
2284	Removed EZ-load I changed “EZ” to “Easy” -AH	7/26/23
2351	Updated Function and Theory Section -AH	10/3/23

EC Declaration of Conformity

Manufacturer:

Geotech Environmental Equipment, Inc.
2650 E 40th Avenue
Denver, CO 80205

Declares that the following products,

Product Name: Geopump Peristaltic Pump

Model(s): 51350018 - GEOPUMP, CE, SERIES II, DC ONLY
51350021 - GEOPUMP, CE, SERIES I, DC ONLY
51350031 - GEOPUMP, CE, SERIES I
51350032 - GEOPUMP, CE, SERIES II

Year of manufacture: 2023

Conform to the principle safety objectives of 2006/95/EC Low Voltage Directive by application of the following standards:

61010-1 Ed. 9.0 en:2018
809+A1/AC:2010

Year of affixation of the CE Marking: 2023

Conform to the protection requirements of 2004/108/EC Electromagnetic Compatibility (EMC) by application of the following standards:

61000-6-1:2019
61000-6-3:2022
61326-1:2020

EMC conformity established: 6/15/2023

Production control follows the ISO 9001:2015 regulations and includes required safety routine tests.

This declaration issued under the sole responsibility of Geotech Environmental Equipment, Inc.

A handwritten signature in cursive script that reads "Joseph Leonard".

Joe Leonard
Product Development

Serial number _____

The Warranty

For a period of one (1) year from date of first sale, product is warranted to be free from defects in materials and workmanship. Geotech agrees to repair or replace, at Geotech's option, the portion proving defective, or at our option to refund the purchase price thereof. Geotech will have no warranty obligation if the product is subjected to abnormal operating conditions, accident, abuse, misuse, unauthorized modification, alteration, repair, or replacement of wear parts. User assumes all other risk, if any, including the risk of injury, loss, or damage, direct or consequential, arising out of the use, misuse, or inability to use this product. User agrees to use, maintain and install product in accordance with recommendations and instructions. User is responsible for transportation charges connected to the repair or replacement of product under this warranty.

Equipment Return Policy

A Return Material Authorization number (RMA #) is required prior to return of any equipment to our facilities, please call our 800 number for appropriate location. An RMA # will be issued upon receipt of your request to return equipment, which should include reasons for the return. Your return shipment to us must have this RMA # clearly marked on the outside of the package. Proof of date of purchase is required for processing of all warranty requests.

This policy applies to both equipment sales and repair orders.

**FOR A RETURN MATERIAL AUTHORIZATION, PLEASE CALL OUR
SERVICE DEPARTMENT AT 1-800-833-7958.**

Model Number: _____

Serial Number: _____

Date of Purchase: _____

Equipment Decontamination

Prior to return, all equipment must be thoroughly cleaned and decontaminated. Please make note on RMA form, the use of equipment, contaminants equipment was exposed to, and decontamination solutions/methods used. Geotech reserves the right to refuse any equipment not properly decontaminated. Geotech may also choose to decontaminate the equipment for a fee, which will be applied to the repair order invoice.



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