

Geotech Auto Sampler

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.

Section 1: System Description

Function and Theory

The Geotech Composite Sampler automatically collects numerous individual samples taken at adjustable intervals over a period of time. The flow-weighted sample collected is representative of an average concentration of any substance being analyzed. Designed for portable or dedicated applications, the Geotech Auto Sampler is effective in outfall, in-stream, manhole, and open-fluid sample point applications.

The Auto Sampler operates by mechanical peristalsis; therefore, the sample only comes in contact with the tubing. This allows for sample integrity as well as easy cleaning and tubing replacement. When using the optional stainless steel tubing weight, tubing can be lowered without curling or floating on the surface of the water. Auto Samplers can operate from any external 12V DC or 120V AC power source.

Differences between the two models affect the number of pump heads which may be used with the Auto Sampler at one time and the speed(s) at which the pump heads operate.

System Components

SERIES I Auto Sampler

Auto Sampler pump comes with a DC power cord. An AC power adapter is optional. These units have one pumping station with a fixed 350 RPM drive.

Enclosure

The round 15.8" (40cm) diameter enclosure stores all components (Auto Sampler controller, sample bottles, ice packs and battery), prevents UV exposure to samples, and keeps sample cool. The enclosure includes built-in side handles allowing the system to be suspended within a manhole.

Sample Bottles

The unit includes two (2) 2.6 gallon (9.8 liters) LDPE sample bottles. For the sample bottles, one rubber stopper, which has a shut-off float switch that will turn off the Auto Sampler when the sample bottle is full.

Battery

The battery is a 12 volt, 9 Ampere hour (at the 20-hour rate) rechargeable lead-acid dioxide battery. It is recommended to charge the batteries in an upright position for optimum life and capacity.

Before using the battery, recharge for a period of 18-24 hours.

Tubing

The unit comes with the 5' (1.5m) of silicone tubing (for the pump connection) and 100' (30.5m) of HDPE suction tubing (used externally) with a stainless steel suction intake.

System 2: System Installation

To install:

1. Remove all components from the enclosure.
 - If there are any damaged or missing items, contact Geotech.
2. Connect pump tubing to the inlet inside of cooler.
3. Place sample bottle inside of the enclosure.
4. Place optional ice packs around the sample bottle.
5. Place the battery at the bottom of the enclosure next to the sample bottle.
6. Connect the battery to the Auto Sampler.
7. Follow the *Easy-Load II Pump Head Instructions* below to install the pump tubing to the pump head. Ensure correct flow direction when installing.
8. Place the Auto Sampler above the battery.
9. Connect the pump tubing to the rubber stopper.
10. Place the rubber stopper on the sample bottle.
11. Connect the level-switch shut off from the rubber stopper to the Auto Sampler.
12. Place lid on top of the enclosure and secure the enclosure lid.
13. Connect the suction tubing to the suction hose inlet on the outside of the enclosure.

Easy-Load II Pump Head Instructions

1. Attach the Easy-Load II pump to the Auto Sampler with the screws provided.
2. Set the lever to the left to open the pump.
3. Place the tubing left to right.
 - Ensure tubing is placed over the stainless steel rollers.



4. Set the lever to the right to close the pump housing onto the tubing.



Section 3: System Operation

To place the pump into service:

1. Remove the pump from the enclosure and verify the pump is switched to “OFF”.
2. Ensure the pump tubing is properly installed into the pump head (see *Section 2: System Installation*).
3. Put one end of the suction tubing into the sample source (well, river, ditch, lagoon, waste water stream, etc.) and ensure the pump tubing is placed in the sample bottle.
 - If pump tubing is not yet installed, see *Section 2: System Installation*.
4. Turn the pump “ON”.

Start Delay (Hours)

The Start Delay delays sampling by a preset amount of time. If no delay is desired, set the control to “0”. The Delay Time starts when the unit is powered on. Consider setting delay to ~ 30 minutes to allow sufficient time to deploy the Auto Sampler.

Sample Time

The Sample Time sets the time for a single composite sample. For example, for a full sample, set the Sample Time dial to “FULL”. See chart below for estimated sample size vs timer setting.

**Sample Volume VS Sample Time
Based on Size 24 Silicone Tube**

	Estimated Sample Volume (mL)						
	50	125	250	500	750	1,000	10,000
Tubing length (ft.) (.375"ID)	Estimated Sample Time (Seconds)						Full Container
1	4	8	16	31	47	62	613
10	9	23	63	37	52	67	618
20	15	19	27	42	58	73	624
29	20	25	32	48	63	78	629

	Estimated Sample Volume (mL)						
	50	125	250	500	750	1,000	10,000
Tubing length (ft.) (.375"ID)	Estimated Sample Time (Minutes)						Full Container
1	0.1	0.1	0.3	0.5	0.8	1.0	10.2
10	0.1	0.4	0.6	0.6	0.9	1.1	10.3
20	0.2	0.3	0.5	0.7	1.0	1.2	10.4
29	0.3	0.4	0.5	0.8	1.1	1.3	10.5


Sample Interval


Sample interval sets the time interval in between sample collection times. For example, to collect a 24 hour composite sample, set Sample Interval to 1 hour, set Sample Time to 45 seconds (based on 29' (8.8m) of tube length) to collect (24) 415 ml samples = 10 liters.


Purge Timing


Purge timing is automatic based on sample time settings. The Auto Sampler automatically purges the sample line after the sample is collected.


LED


 Power on
Blue 1 second, Green 1 second

 Start Delay
Blue flash, 1 second


 Purge
Blue solid


 Sample Interval
Green flash, 1 second

 Sample Time
Green solid

 Full
Blue/Green Flash

LED Start Up Sequence with Delayed Start

 If Start Delay is under 1 hour, 4 green flashes.

 Up to 12
If more than 1 hour, 1 Long green flash per hour up to 12 hours.

Section 4: System Maintenance

The following maintenance steps will assure trouble-free operation:

Pump Tubing

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

To keep the Auto Sampler reliable follow these simple guidelines:

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

Power Cords

Units are wired using a DC power cord. An AC adapter is available for continuous operation. Always replace a kinked or damaged power cord. Refer to the Geotech Warranty and Repair page in the back of this manual.

Pump Head

Clean the Auto Sampler 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 intake is submerged. Max suction lift unit can pump from is 29 feet (8.8m) below ground at sea level.
2. If using a combination of flexible and rigid tubing, check connection between tubing. A poor connection may cause a vacuum leak. Secure tubing connection.
3. Flexible tubing in pump head compromised or worn out:
 - Replace flexible tubing regularly.
4. Obstruction in tubing:
 - Check for clogs and kinks.
 - Clear any obstructions.
5. Using incorrect tubing type for pump head:
 - Tubing may have collapsed.
 - Replace with Geotech recommended 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.

Section 6: System Specifications

<u>Size (Diam x Ht)</u>	15.81 x 23.25 inches (40 x 59 cm)
<u>Weight</u>	Dry Weight– 24lbs (12 kg) Wet Weight – 49lbs (22 kg)
<u>Sample Bottle</u>	2.6 Gallon HDPE Bottle
<u>Sample Cooling</u>	Reusable Ice Packs (not included)
<u>Pump Tubing</u>	.25" (6.4mm) ID Standard .375" (9.5mm) ID Max Flow
<u>Suction Tubing</u>	.25" x .375" (6 x 10mm) Standard .375" x .625" (10 x 13mm) Max Flow
<u>Intake Strainer</u>	.85" OD Stainless Steel Intake

Pump & Controller

<u>Power Requirements</u>	12 VDC ²
<u>Principle of Pump Operation</u>	Peristaltic Pump
<u>Fluid Delivery Rate</u>	1800 ml/min Standard - 3400 ml / min Max Flow
<u>Maximum Suction Lift</u>	29 ft. (8.8 m) Standard at sea level ⁴ 27 ft. (8.3 m) Max Flow at sea level ⁴
<u>Onboard Battery</u>	9 Ah Lead-Acid ³
<u>Battery Life</u>	1 hour continuous operation
<u>Sample Mode</u>	Linear
<u>Intake Purge</u>	Auto backflush cycle
<u>Start Delay</u>	0-12 hours ⁵
<u>Sample Time</u>	0-15 minutes ⁵ (0-30 seconds then 1min increments to Full Bottle)
<u>Sample Interval</u>	0-12 hours ⁵ (0-60 minutes the 2 – 12 hours in hour increments)
<u>Sample Size</u>	50 ml – 10+ liters
<u>Overflow Protection</u>	Shut-Off input float switch
<u>System Status</u>	LED indicator
<u>Operational Temp</u>	32° - 120° F (10° - 49° C)

² 12VDC input power required. Optional AC converter allows for continuous operation with reliable 115vAC power source.

³ System kit includes two batteries. System requires only one battery for operation. Geotech recommends swapping batteries each time sample bottle is replaced.

⁴ Ft. elevation x 0.0005 x 2.31 – Max Suction lift H₂O ft. at sea level = ft. actual H₂O suction lift

⁵ Start delay, sample time, and sample intervals can be programed for custom interval(s) at time of order.

Section 7: Parts and Accessories

Part Number	Part Description
51350001	Assy, Gear Housing, Series I
51350003	Assy, Motor, PP
51350012	Assy, Housing, Bottom, PP
17500042	Foot, RBR, 9/32" Hole Dia
11350005	Breaker, Thermal, 5amp, Circuit 250V
11350021	Switch, Toggle, Dpst, On/Off
11350009	Handle, PE, NI
11350015	Plate, AL, 1.5x1.5, Hardwire, Cord, Painted
00114	Screw, SS8, 4-40x3/8", FHD
11350019	Grommet, RBR, 5/16x1/2", 1/4" Thick Hole
17500040	Cord, SJOW, DC Power, 18-2
17500366	Screw, SS8, 8-32x3/8", SHCS
17200081	Washer, SS8, #8, Lock
17200046	Nut, Hex, 4-40, Nyloc
17200078	Screw, SS8, 6-32x.25", PNH, M/S
17200077	Screw, SS8, 6x3/8", PNH, TEK Self Drilling

Additional Parts Listing

Part Number	Part Description
17500035	Adaptor, Cigarette to Clips
51350030	Power Supply, AC Adapter, PP, 18V, 70W, CE
57500008	Assy, Power Cord, DC w/Amp
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", Phil

Accessories / Consumables

87050009	Tubing, Silicone, SZ24, FT
77050543	Tubing, HDPE, 1/4 x 3/8, 100FT, Coil
51150069	Intake, .85 BP, Droptube, CE, HB=DT:0.25

DOCUMENT REVISIONS		
Project #	DESCRIPTION	REV/DATE
2089	Release, StellaR	12/15/2020
2089	Updated cover photo - StellaR	4/1/2021

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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