



GEO CONTROLLERS

Geo controllers are the brain in the system, utilizing a programmable logic controller (PLC) to activate the pumps cycles, zone valves and flush valves when needed. See the table below for the control panel that fits your application.

All Geo controllers have the following built-in log functions:

- Elapsed time meter (ETM)
- Pump events
- Peak timer events
- High level alarm events
- Power failure events

Note: ETM and pump events are recorded whenever contactor is energized.

Float Functions GEO Controllers

Floats	Functions
<p>High Level Alarm Float</p>	<p>Float raised - Alarm enable.</p> <p>Activates the audible and visual alarm when lifted. Audible alarm may be silenced by pressing the illuminated "PUSH TO SILENCE" button. The audible alarm reactivates after 12 hours if the alarm condition is not resolved. The alarm light will remain on until the float is lowered.</p>
<p>Secondary Timer On/Off Float</p>	<p>Float raised - Peak Timer enable.</p> <p>The Peak timer will cycle the pump(s) more frequently. The Peak Timer function will remain active until the Primary Timer enable float lowers. When the Peak Timer function has been completed and the Primary Timer enable float is reactivated, normal timer operation will resume.</p>
<p>Primary Timer On/Off Float</p>	<p>Float raised - Timer enable.</p> <p>The Primary Timer will control pump cycles, beginning with the off cycle. Note: On duplex panels the pumps will alternate with each timer cycle.</p>
<p>Redundant Off & Low Level alarm float</p>	<p>Float raised - Pump enable.</p> <p>Float lowered - Pump disable. Flashing visual & audible alarm enable.</p> <p>This is a secondary off float that will prevent the operation of the pump if the water level in the tank gets too low. Pumping will be disabled in both the automatic and manual modes. This float also activates the visual and audible alarms. Audible alarm may be silenced by pressing the illuminated "PUSH TO SILENCE" button. The audible alarm reactivates after 12 hours if the alarm condition is not resolved. The flashing alarm light will remain on until the float is raised. When raised, this float will enable operation of the pump.</p>

Choose a GEO controller:

Step 1: Number of zones in dispersal field.

- Single zone. - Go to GEO1 table below.
- Two to four zones. - Zones activated hydraulically with indexing valves. Go to GEO1 table.
- Zones activated electrically with solenoid valves. Go to GEO4 table.
- Five to eight zones. - Zones activated hydraulically with indexing valves. Go to GEO1 table.
- Zones activated electrically with solenoid valves. Go to GEO8 table.
- More than 8 zones. - Zones activated hydraulically with indexing valves. Go to GEO1 table.
- Zones activated electrically with solenoid valves. Special order.
- Zones activated with index & solenoid valve combinations can be accommodated. Please call Geoflow, Inc.

Step 2: Voltage.

Determine the required pump voltage.
 115vac (max 3/4hp; 1phase pump) or 230vac (max 2hp; 1phase pump).
 Pumps must have internal capacitors. Any pumps requiring external capacitor kits will be special order. Capacitor kits and dimensions must be provided by pump manufacturer.

Step 3: Number of pumps.

Choose one pump (simplex) or two pumps (duplex).

Step 4: Flushing operation.

Choose manual or electronic field and filter flushing. Geoflow requires all direct septic systems use electronic flushing. (Manual flushing not available on GEO4 or GEO8 panels).

GEO 1 Table

Step 1	Step 2	Step 3	Step 4	Part Number
GEO1	115vac	Simplex	Manual	Geo1-115v-Sim-Man
			Auto	Geo1-115v-Sim-Aut
		Duplex	Manual	Geo1-115v-Dup-Man
			Auto	Geo1-115v-Dup-Aut
	230vac	Simplex	Manual	Geo1-230v-Sim-Man
			Auto	Geo1-230v-Sim-Aut
		Duplex	Manual	Geo1-230v-Dup-Man
			Auto	Geo1-230v-Dup-Aut

GEO 4 Table

Step 1	Step 2	Step 3	Step 4	Part Number
GEO4	115vac	Simplex	Auto	Geo4-115v-Sim-Aut
		Duplex	Auto	Geo4-115v-Dup-Aut
	230vac	Simplex	Auto	Geo4-230v-Sim-Aut
		Duplex	Auto	Geo4-230v-Dup-Aut

GEO 8 Table

Step 1	Step 2	Step 3	Step 4	Part Number
GEO8	115 vac	Simplex	Auto	Geo8-115v-Sim-Aut
		Duplex	Auto	Geo8-115v-Dup-Aut
	230 vac	Simplex	Auto	Geo8-230v-Sim-Aut
		Duplex	Auto	Geo8-230v-Dup-Aut

GEO1 MANUAL CONTROLLERS

The Primary Timer (float 2-activated) controls the pump dose cycle during normal operating conditions. During high flow conditions the pump dosing cycles will be controlled by the Peak Timer (float 3 - activated). The Peak Timer off is typically set to trigger more frequent flow than the Primary Timer off setting.

If *duplex pump* option is chosen, the pumps are alternated every pump cycle and never operate simultaneously. There is a selection switch for pump 1, pump 2 or alternation. This allows one pump to be taken out of service for maintenance without affecting the operation of the system.

Pump dosing cycles are controlled by the timers when the H-O-A switch is in the auto position. Under normal conditions the Primary Timer (float 2) will control the pump(s). During high flow conditions, the Peak Timer (float 3) will control the pump(s). The Peak Timer will cycle the pump more frequently than the Primary Timer (field adjustable). The pump will dose for the same amount of time as it does when operated by the Primary Timer but the time in between doses, or the Peak timer “off time”, will be 75% of that of the Primary Timer “off time”. Factory settings (field adjustable) are 1 hr 55 minutes off and 5 minutes on for Primary Timer and Peak Timer is set to 1 hr 25 minutes off (1 hr 55 mins x 75%) and 5 minutes on. Consequently peak doses are more frequent than normal.

Hydraulically activated zone valve(s) will index each time the PLC calls for a dose. Each time the pump is called for another zone is dosed. The controller does not dose all zones sequentially as “one” dose and ignores the fact that there are multiple zones for the purpose of dosing. For example if the Primary Timer is programmed to be off for 1 hour, on for 5 minutes and there are four zones, each zone will get 6 doses - five minutes in length - in a 24-hour period. The controller will dose a single zone every hour and will not dose all zones every hour.

GEO AUTOMATIC CONTROLLERS

The Primary Timer (float 2 activated) controls the pump dose cycle during normal operating conditions. During high flow conditions the pump dosing cycles will be controlled by the Peak Timer (float 3 activated).

If *duplex pump* option is chosen, the pumps are alternated every pump cycle and never operate simultaneously. There is a selection switch for pump 1, pump 2 or alternation. This allows one pump to be taken out of service for maintenance without affecting the operation of the system. *The Vortex Filter flush* valve will open for 15 seconds (field adjustable) at the end of the pump cycle to allow the filter to self-flush. When the vortex filter flush is complete, the filter flush valve will close and the system drain function will begin.

Pump dosing cycles are controlled by the timers when the H-O-A switch is in the auto position. Under normal conditions the Primary Timer (float 2) will control the pump. During high flow conditions, the Peak Timer (float 3) will control the pump. The Peak Timer will cycle the pump more frequently than the Primary Timer . The pump will dose for the same amount of time as it does when operated by the Primary Timer but the time in between doses, or the Peak Timer “off time”, will be 75% that of the Primary Timer “off time”. Factory settings (field adjustable) are 1 hr 55 minutes off and 5 minutes on for Primary Timer and Peak Timer is set to 1 hr 25 minutes off (1 hr 55 mins x 75%) and 5 minutes on.

Zone valve(s) will open when the PLC calls for a dose or flush. These can be electrically operated solenoid valves (requires GEO4 or GEO8) or hydraulically activated index valves (used with GEO1). Each time the pump is called for another zone is dosed. The controller does not dose all zones sequentially as “one” dose but rather ignores the fact that there are multiple zones for the purpose of dosing. The total doses of all zones in a 24-hour period must be considered when setting the “off” timer(s). After the pump is deactivated the electrically activated solenoid flush valve will remain open for five minutes (field adjustable) to allow for drainage of the supply line and return line.

If hydraulically activated index valve is used, be sure to drain the supply line in freezing climates.

If hydraulically activated index valves are used in combination with a solenoid field flush valve, a field setting for number of zones and number of zone valves is available.

Field flush valve will open at the end of the dosing cycle. The pump will continue to run for 5 seconds (field adjustable) to accommodate the opening of this valve. After the pump is deactivated the field flush valve will remain open for five minutes (field adjustable) to allow for drainage of the return line in freezing conditions. It is best to clock the length of time it takes the return flush line to drain and use this to set your drain time.

The activated zone valve remains open at the end of the dose for same “ # ” minutes as return flush and filter flush valves to accommodate drainage of supply line.

To periodically *flush the dripfield*, after 10 dosing cycles (field adjustable) the pump will operate for 5 minutes (field adjustable) with the field flush valve open. The field flush cycle will repeat until all zones have been flushed. This operation will also occur after a power outage. This is achieved by correctly inputting number of zone valves (if applicable) and number of zones during setting of the controller values.

GEO Panel Components:

- Siemen’s Logo programmable logic module for timing and controls.
- Contactor and circuit breaker for pump (115VAC; max 3/4hp; 1 phase pump or 230VAC; max 2hp; 1 phase pump). Pumps must have built in capacitors. (External capacitor kits are special order).
- Hand-Off-Auto (H-O-A) switches for pump(s) and valve(s) operation.
- Connections/contacts for normally closed 24 VAC valves. (Contacts for normally open valves may be special ordered.)
- Elapsed time meter and cycle counter for pump monitoring built in to PLC.
- Circuit breaker for control power.
- Surge arrestor.
- NEMA 4 X fiberglass enclosure.
- UL listed control panel.

GEO Wiring

- Control voltage input is 115 VAC for all GEO1 and GEO4 panels.
- Output to valve(s) is 24 VAC.

Telemetry and SCADA control systems available. Please contact Geoflow for custom panel information.