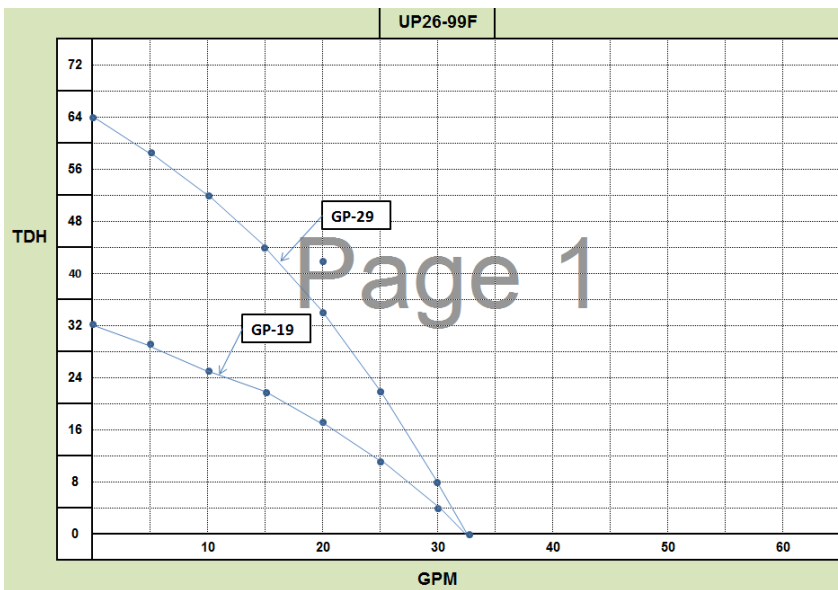


## "GEO-PULSE TWIN"

THE HEART BEAT OF YOUR GEOTHERMAL SYSTEM

### INSTALLATION AND OPERATION INSTRUCTIONS

This manual is to assist you in your installation and operation of your new **"GEO-PULSE TWIN"** geothermal pumping module. Read the manual thoroughly before you begin the installation or operation of the pumping module. The manual applies to the **"GEO-PULSE TWIN"** model **GPT1919, GPT1929, GPT2929, GPT1616, GPT1626, GPT2626** pump models. Reference the following selection curves to determine which model is required for your system.



#### SAFETY IS FIRST:

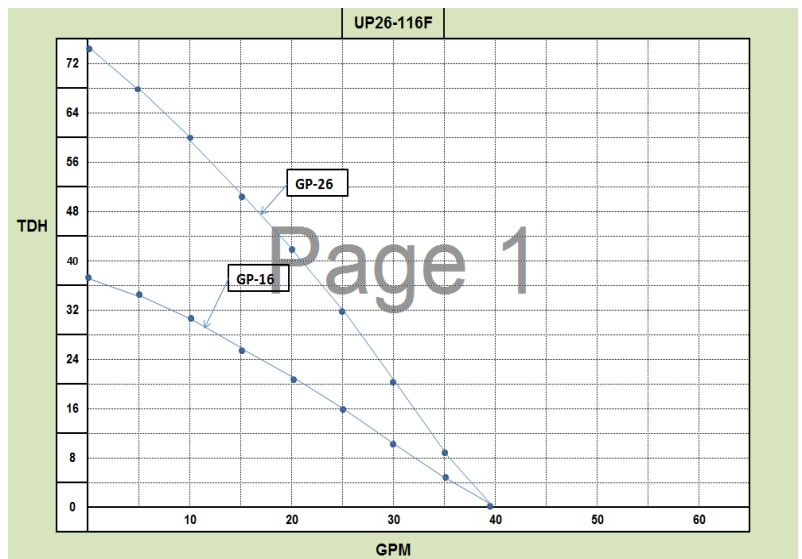
Installing and operating a pump module requires a skilled person that is aware of the electrical and plumbing hazards that may arise. The system is under pressure and is controlled by electricity.

A skilled or trained person must be on site and performing all aspects of the installation, service and operation of this pump module.

All applicable laws and codes must be applied while using this pump module.

#### WARRANTY: PG1 OF 2

This warranty is expressly in lieu of all other warranties, including but not limited to implied warranties of merchantability and fitness, and constitutes the only warranty of Geo-Systems USA with respect to the product(s). If within five years from date of purchase by Company of any item or product(s), Purchaser discovers that such item was not as warranted above and promptly notifies Company in writing thereof, Company shall remedy such nonconformance by, at Company's option, adjustment or repair or replacement of the item and any affected part of the product(s). Purchaser shall assume all responsibility and expense for removal, reinstallation, and freight in connection with the foregoing remedies. The same obligations and conditions shall extend to replacement parts furnished by Company hereunder. Company shall have the right of disposal of parts replaced by it.



# "GEO-PULSE TWIN"

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### PRE-INSTALLATION INSTRUCTIONS

Before installing the "Geo-Pulse TWIN" pump module, check the flow curves against the system flow and pressure drop characteristics to be sure the correct pump module is selected for your system. A one-pump side on a "Geo-Pulse TWIN" pump module can typically accommodate the flow requirements of a unit up to 3 tons. A two-pump side on a "Geo-Pulse TWIN" pump module can typically accommodate the flow requirements of a unit 3 1/2- through 6-tons.

Use the curves on page 1 to verify flow rates and "Geo-Pulse TWIN" pump module selection.

The "Geo-Pulse Twin" pump module must be located between the heat pump and the Geothermal loop field. Location of the "Geo-Pulse Twin" should be selected based on ease of installation and it should be located in a place that is easy to get to for future service. As it is with all pumping systems, leaks may occur due to the wear or failure of the moving parts or improper installations. Therefore, care must be taken in the placement of the equipment so that flooring or surrounding facilities are not damaged by leaking equipment or leaking associated piping. The "Geo-Pulse Twin" is used for circulating water/anti-freeze through the Heat Pump and the Geothermal loop field only. The "Geo-Pulse Twin" pump module is not designed nor intended to be used for any other pumping purpose and cannot be used for any potable water or drinking water service. The "Geo-Pulse Twin" vessels are never to be pressurized. The "Geo-Pulse Twin" pump module may be used for flushing and purging the geothermal system but additional flow and pressure may be required based on the design of the system. If additional flow and pressure is required, reference the Geo-Systems USA flushing and purging manual for additional information, and the Geo-Systems USA flush and purge dolly product line.

### Caution

- 1) The Geo-Pulse Twin pump modules are designed to be used with dedicated Geothermal loop fields only. Multiple Geo-Pulse Twin pump modules on a single geothermal well field will cause a system failure and flooding of the pump module vessels. This is not an acceptable installation.
- 2) The Geo-Pulse Twin pump module is intended to be installed in configurations that have two heat pumps on a common Geothermal loop field. You will size the pump module based on the demand of each heat pump. The Geo-Pulse Twin pump module is divided into two side (Side A and Side B). Each side has a separate heat pump supply connection. There is one common return connection to service both sides of the Geo-Pulse Twin pump module. A balancing port at the bottom interior of the two vessels allows for even distribution of the returned fluid no matter which side is pumping and the same if both sides are pumping.
- 3) The Geo-Pulse Twin pump module includes brass unions for the system fluid connections. The unions include "o" rings for the sealing method which needs to be hand tight only and then turn one quarter of a turn at most with a wrench. If the union is over tightened the piping below the union may become damaged which will cause a leak in the unit. This will not be covered under warrantee.

### WIRING:

1. The Geo-Pulse Twin pumping module must be wired in accordance with all applicable national and local electrical codes. The electrical requirements for the pump motors are determined by the model number that was purchased. Before power is applied the electrician must determine what voltage is required by the model number that was purchased.
2. The pump modules may be wired to any controlling source that allows the pumps to pump fluid freely without stoppage. If a control system is installed that incorporates a solenoid or control valve, the valve must be wired to open at the same time that the pump module is started.
3. NOTE: The WSHP will not operate unless the pump module is flowing fluid at the same time the WSHP is operating.

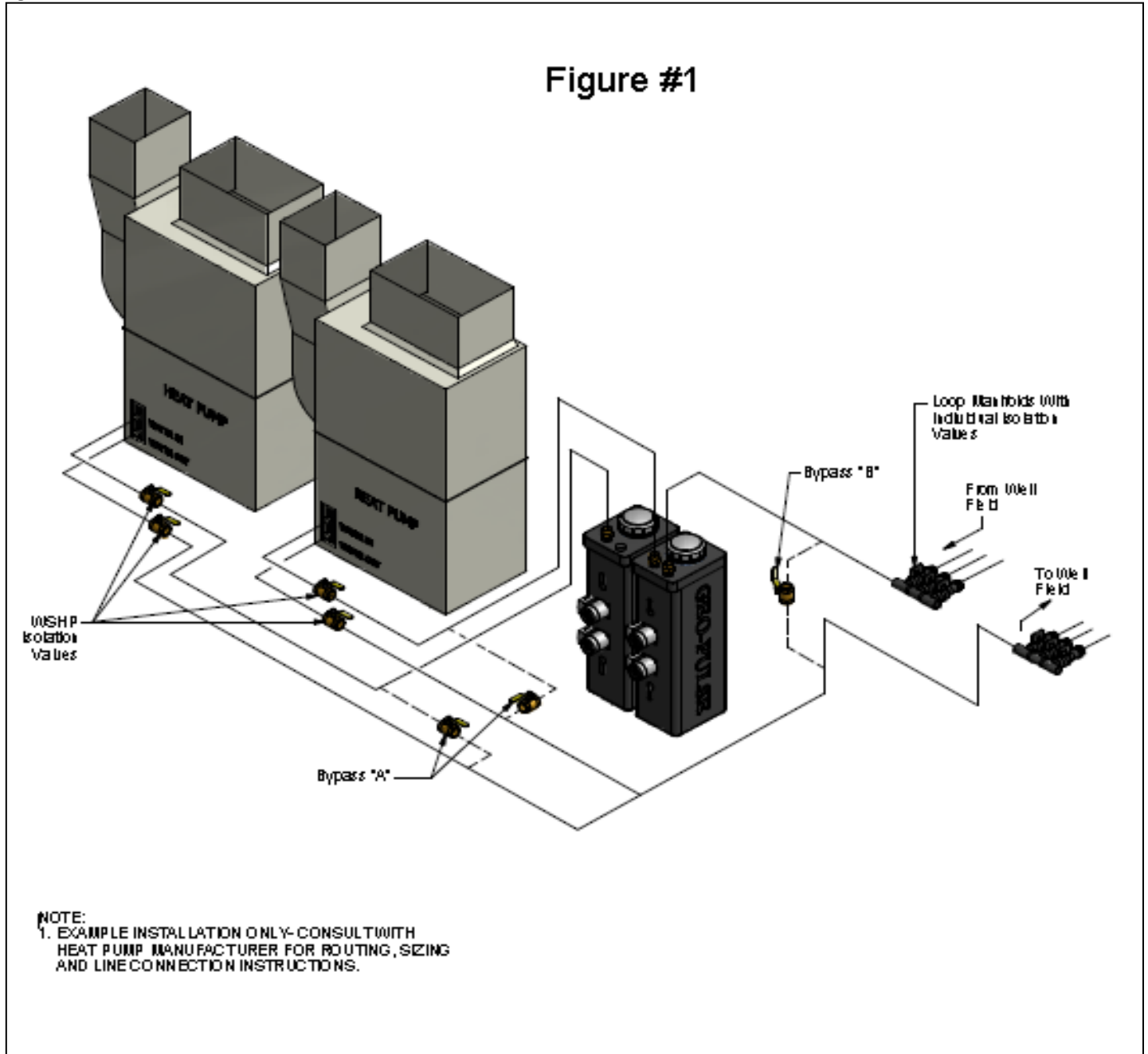
# " GEO-PULSE TWIN "

## INSTALLATION AND OPERATION INSTRUCTIONS

### PIPING:

The Geo-Pulse Twin pumping module can be installed, using several different piping configurations. Refer the following drawings for a successful installation.

Figure #1

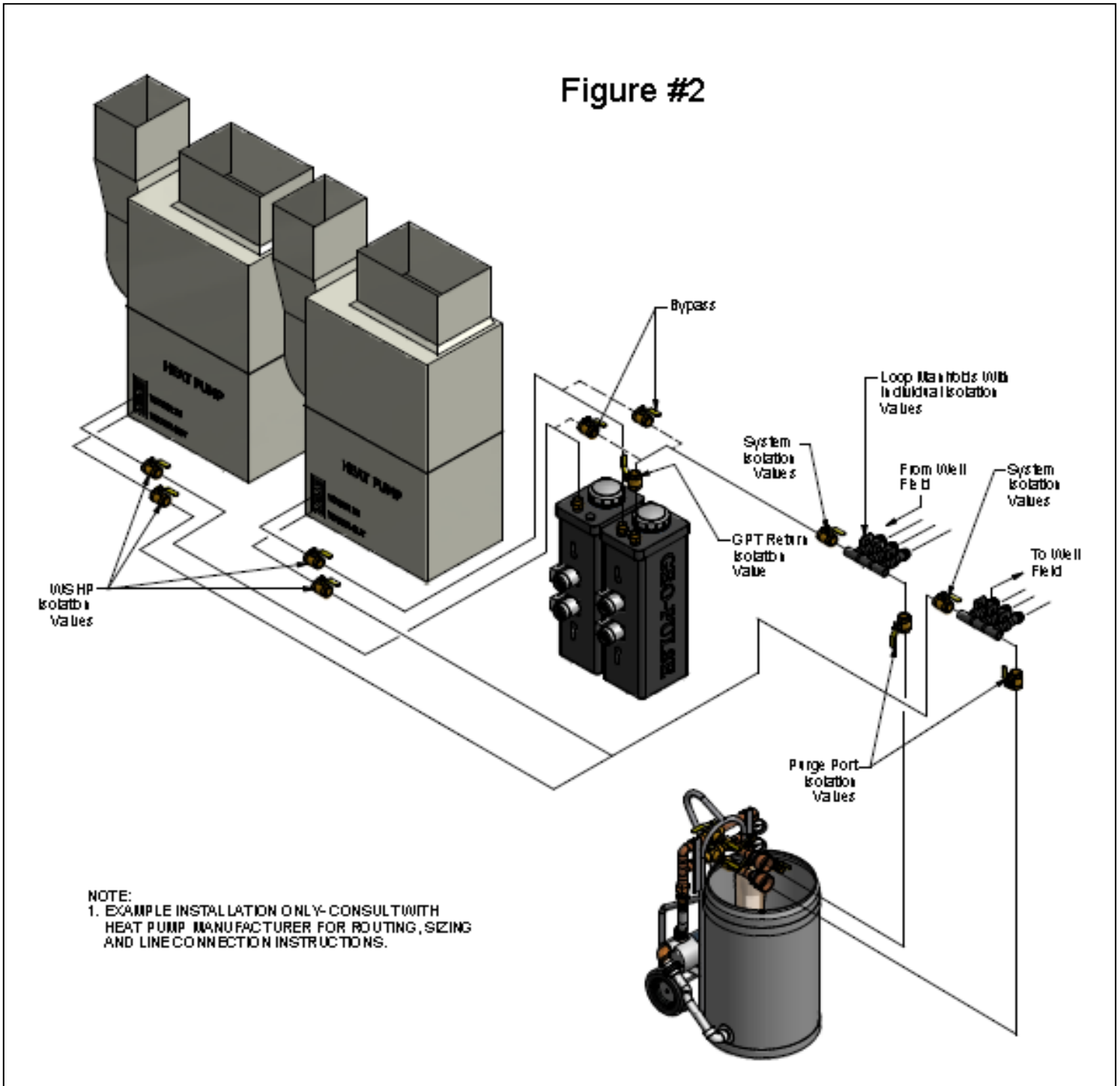


NOTE:  
1. EXAMPLE INSTALLATION ONLY- CONSULT WITH HEAT PUMP MANUFACTURER FOR ROUTING, SIZING AND LINE CONNECTION INSTRUCTIONS.

# " GEO-PULSE "

## INSTALLATION AND OPERATION INSTRUCTIONS

Figure #2



**NOTE:**  
1. EXAMPLE INSTALLATION ONLY-CONSULT WITH HEAT PUMP MANUFACTURER FOR ROUTING, SIZING AND LINE CONNECTION INSTRUCTIONS.

# " GEO-PULSE TWIN "

## INSTALLATION AND OPERATION INSTRUCTIONS

### **FILLING, FLUSHING AND PURGING WITH THE GEO-PULSE TWIN: USING FIGURE #1**

1. The Geo-Pulse Twin pump module may be used for flushing and purging the geothermal system but additional flow and pressure may be required based on the design of the system. If additional flow and pressure is required, reference the Geo-Systems USA flushing and purging manual for additional information.

2. Unscrew lid/lids on the Geo-Pulse Twin Vessels and fill vessels with clean potable water. The vessels should be kept full at a level of 4" from the top at all times.

3. Ensure that both the suction and discharge ball valves on the pumps on both (LEFT SIDE AND RIGHT SIDE) are in the open position (handle pointing up on top valve and down on bottom valve)

4. Remove venting screw on the face of each Grundfos pump and rotate the motor shaft with a small screwdriver to vent the air out of the pump/motor and to lubricate the motor bearings. When water is visible at the venting screw opening replace venting screw.

5. Install the Geo-Systems USA "Pulse-Flow" flushing tool into the "Geo-Pulse Twin" with the 100mesh filter bag firmly attached. The filter bag will collect all of the debris that is flushed out of the loop or well field. The clear tubing of the "Pulse-Flow" flushing tool must stay inside the vessel during the flushing and purging process. (Pulse Flow sold separately)

**Note:** There must be sufficient amount of clean potable water on stand-by (via water hose) to continue to refill the vessel as water is being pumped into the system to fill each well or loop. Do not allow the vessel to run dry during this process or step #4 will need to be repeated each time that happens.

6. Close the isolation valves on each WSHP and open the (by-pass valves A) as shown in the piping drawing (figure #1). If the wells or loops have individual isolation valves (ref. figure #1), open and flush/ purge one set at a time pertaining to each heat pump.

7. Start the pump(s) on the Geo-Pulse Twin and add water through the open vessel tops until a full stream of water is being returned from the well or loop field. Continue flowing water until no more air bubbles are visible in the vessel. Stop the pumps and remove and clean the filter bag.

8. After successfully filling, flushing and purging the well or loop field, open the isolation valves on each WSHP, close the (by-pass valves A), and open (by-pass valve B). If the wells or loops have individual isolation valves close all of the well or loop field isolation valves. Leave the filter bag attached, start the pumps and allow them to run for at least 30 minutes which should remove any air or debris that was in each WSHP. Remove the flushing tool, close (by-pass valve B) as shown in (figure #1b) and the system is ready for normal operation.

### **FILLING, FLUSHING AND PURGING WITH A FLUSH AND PURGE DOLLY: USING FIGURE #2**

1. Unscrew lids on Geo-Pulse Twin Vessels and fill vessels with clean potable water. The vessels should be kept full at a level of 4" from the top at all times.

2. Ensure that both the suction and discharge ball valves on the pumps on both (LEFT SIDE AND RIGHT SIDE) are in the open position (handle pointing up on top valve and down on bottom valve)

3. Remove venting screw on the face of each Grundfos pump and rotate the motor shaft with a small screwdriver to vent the air out of the pump/motor and to lubricate the motor bearings. When water is visible at the venting screw opening replace venting screw.

# " GEO-PULSE TWIN "

## INSTALLATION AND OPERATION INSTRUCTIONS

### **FILLING, FLUSHING AND PURGING WITH A FLUSH AND PURGE DOLLY, continued: (Using figure 1a)**

4. Open the Geo-Pulse Twin by-pass valves, close GPT return isolation valve, and close the system isolation valves as shown on (figure #2). If the wells or loops have individual isolation valves (ref. figure 2), open and flush/ purge one set at a time.

5. Connect the flush and purge dolly to the purge port valves (ref. figure #2). Fill the flush and purge dolly with clean potable water. Install the 100 mesh bag filter to the return nozzle on the flush and purge dolly. Connect the flush and purge dolly electrical cord to a reliable power source. Open the purge port valves (ref. figure #2).

6. Start the flush and purge pumping system and add water to the flush and purge drum until a full stream of water is being returned from that well or loop. Circulate that loop until no air bubbles are visible in the flush and purge drum. Stop the pump and remove and clean the filter bag before beginning the same process on the next well or loop.

7. After the first well or loop is full and clean, isolate that well or loop and move to the next pair of well or loop isolation valves to fill, flush and purge that well or loop. Continue with this procedure until all wells or loops have been filled, flushed and purged.

8. After all of the wells or loops have been filled, flushed and purged, open all the well or loop field valves and circulate the entire loop field for 30 minutes using the flush and purge dolly pump to circulate the water.

9. The well or loop field should now be flushed and purged if the instructions above have been followed correctly. The next step is to flush and purge the interior system piping and each of the WSHP. Open interior systems isolation valves, and all other valves should currently be in correct position if previous instructions have been followed correctly.

10. With flush and purge dolly still connected to the flush ports begin to flush and fill the interior system. If a well field manifold is present and each well has isolation valves all of the individual well isolation valves should be closed so as to not fill well or loop field up with air to be purged out again

**Note:** There must be sufficient amount of clean potable water on stand-by (via water hose) to continue to refill the purge dolly as water is being pumped into the system and WSHP.

11. Once all air and debris has been removed from the interior system turn off flush and purge dolly and close purge port isolation valves.

12. Close the isolation valves on the WSHPs and close the by-pass valve. Open the system isolation valves and the well/loop field valves. The system is ready for normal operation. Close the Geo-Pulse Twin by-pass valves, open loop connection isolation valve on Geo-Pulse Twin, and insure that the interior system isolation valves are open as shown on figure #2. If the wells or loops have individual isolation valves those valves must all be in the open position(ref. figure 1a).

13. Systems is ready for normal operation.

# "GEO-PULSE TWIN"

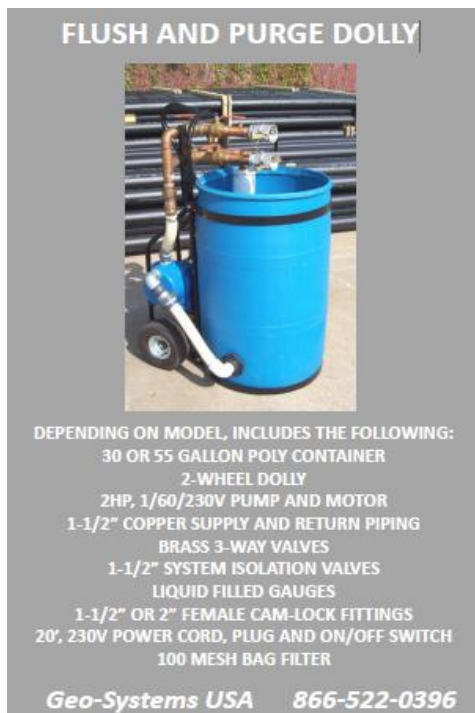
## INSTALLATION AND OPERATION INSTRUCTIONS

### START-UP PROCEDURE:

1. Check the flow of the "Geo-Pulse Twin" through the systems via the "Pulse Flow" flow meter to ensure that correct flow is being supplied to the system. If incorrect flow is being supplied check the "Geo-Pulse Twin" pump curves on page 1 to ensure that the correct model has been supplied for your system. If you have the correct model "Geo-Pulse Twin" and you are not getting the correct flow through your system there must be an obstruction that is preventing correct water flow or there is still residual air in your system.

**Note:** If the water level changes during a normal operating cycle, you must check for air in the system. The water level should stay the same, plus or minus 2", if the system has been purged correctly. If air is present in the system, repeat the flushing and purging procedures as stated above.

2. After you have achieved the required flow rate of your heat pump and all air has been purged from the system ,the complete system is now ready for normal operation



Flush & Purge Dolly



"Pulse Flow" Flushing tool.

### GEO-SYSTEMS USA

\*\*\*2435 DILLARD STREET, GRAND PRAIRIE, TEXAS 75051\*\*\*

TOLL FREE 1-866-522-0396

PHONE 1-972-522-0396

THE HEART BEAT OF YOUR GEO-THERMAL SYSTEM

**"GEO-PULSE"**

