

# GPM SERIES LOOP PUMP MODULES

## INSTALLATION MANUAL



*Heating & Cooling Products*

**BARD MANUFACTURING**  
**BRYAN, OHIO**

MANUAL 2100-212

Please read and follow the instructions in this manual carefully before attempting to install or service this module. All installations must be done in accordance with all applicable codes. This manual should remain with the owner after installation.

## **Application**

The Bard Manufacturing GPM series pump modules are designed to satisfy the fluid circulation requirements for most residential and light commercial closed-loop geothermal heating and cooling systems. Refer to Page 7 for module pumping specifications.

## **Inspection**

At time of delivery, inspect the carton(s) for visible damage and note any damage on the shipping papers.

Remove the module from the carton and inspect for damage. If the module shows signs of transit damage, file a claim with the carrier promptly.

## **Mounting the Module**

Using the mounting holes provided, mount the module to a vertical surface as close to the heat pump as possible. The module can be mounted with the flow paths either vertical or horizontal.

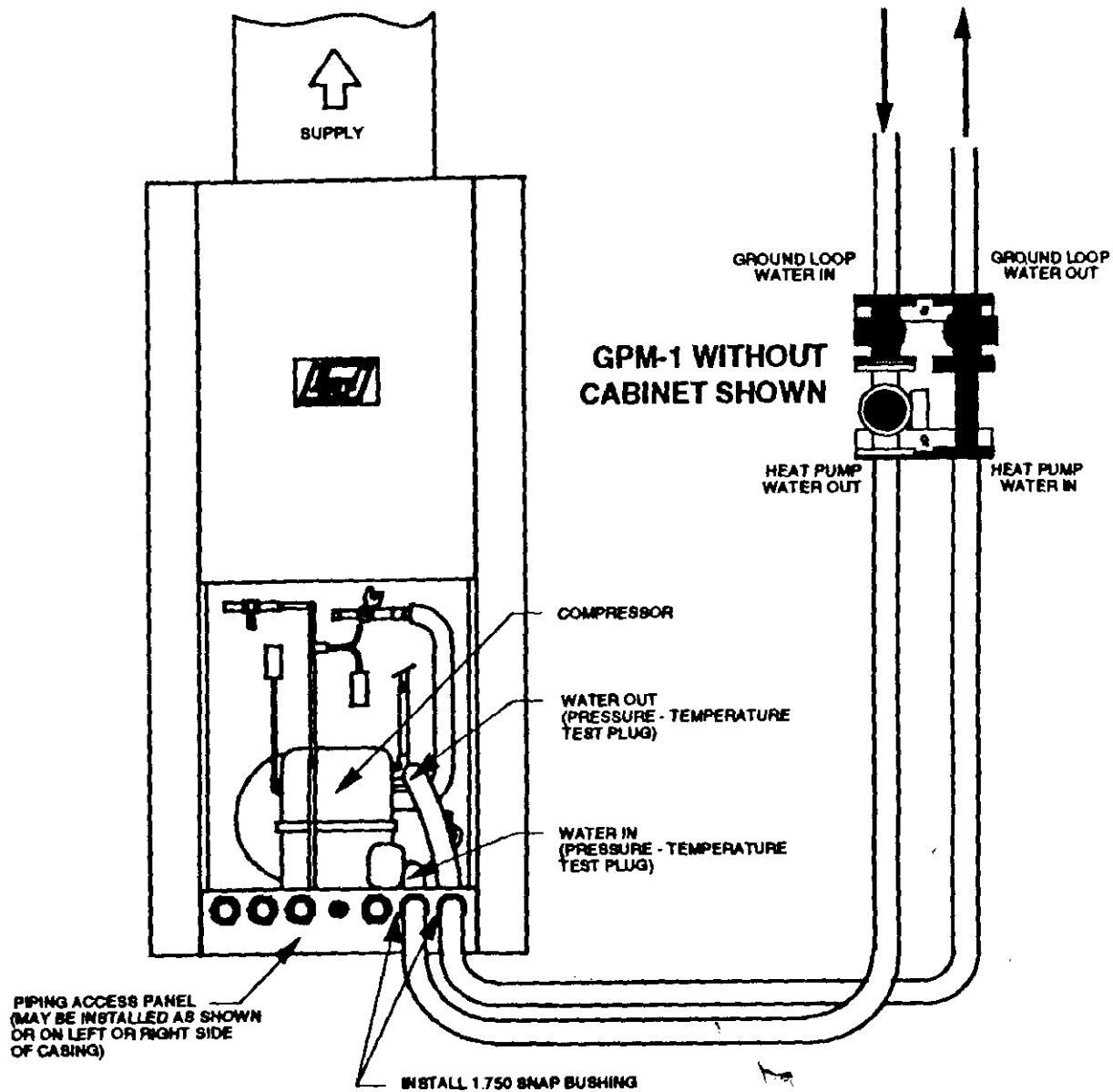
## **Piping the Module**

Piping connections from the module to the heat pump are best done with a Bard Manufacturing hose kit. The kit consists of 12 feet of 1" ID reinforced flexible hose, tapped brass heat pump adaptors, brass module adaptors, stainless steel hose clamps, and pressure-temperature plugs to permit pressure drop and temperature measurements. Be sure to insulate the flexible hose where water condensation could be a problem.

Standard 1" NPT external water connections are provided to make connection with the earth loop piping. Again, insulate the earth loop pipe indoors where water condensation could be a problem. NOTE: Always pipe the module so that the circulator(s) is(are) located between the module valves and the heat pump,

never on the earth loop side of the valves. Flushing the earth loop through the circulator(s) would be very difficult or impossible.

See the following figure for more information.



## Wiring the Module

Bard Manufacturing GPM modules use 230VAC single phase circulator pumps. Wire the module according to Bard Manufacturing instructions. Follow all applicable electrical codes.

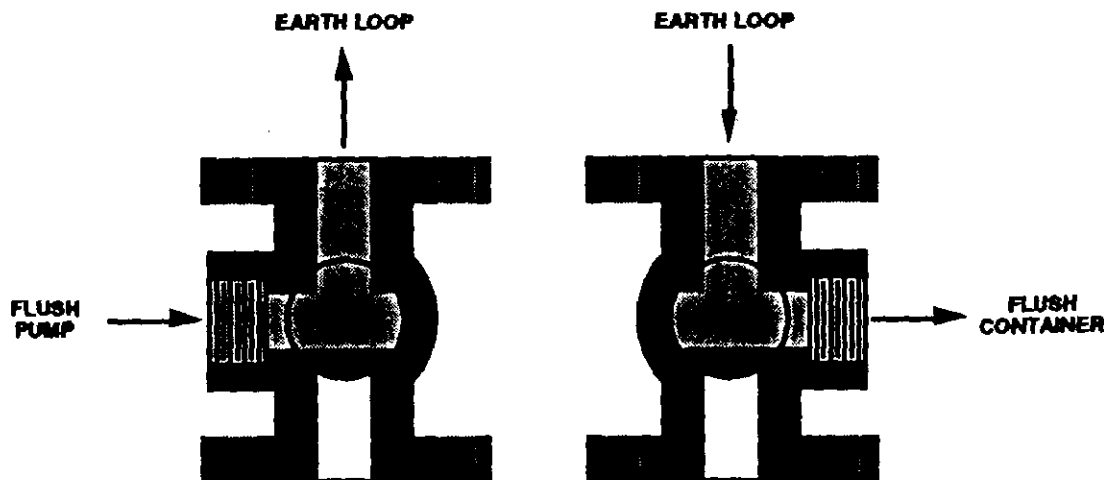
Generally, the module should operate whenever the heat pump compressor operates.

All earth loop systems must be flushed to remove air and debris. A high volume, high head circulator pump must be used to flush and fill an earth loop.

Pump suction should be from the bottom of a large volume container. A suction line strainer should be used to prevent debris discharged into the container from being returned to the system.

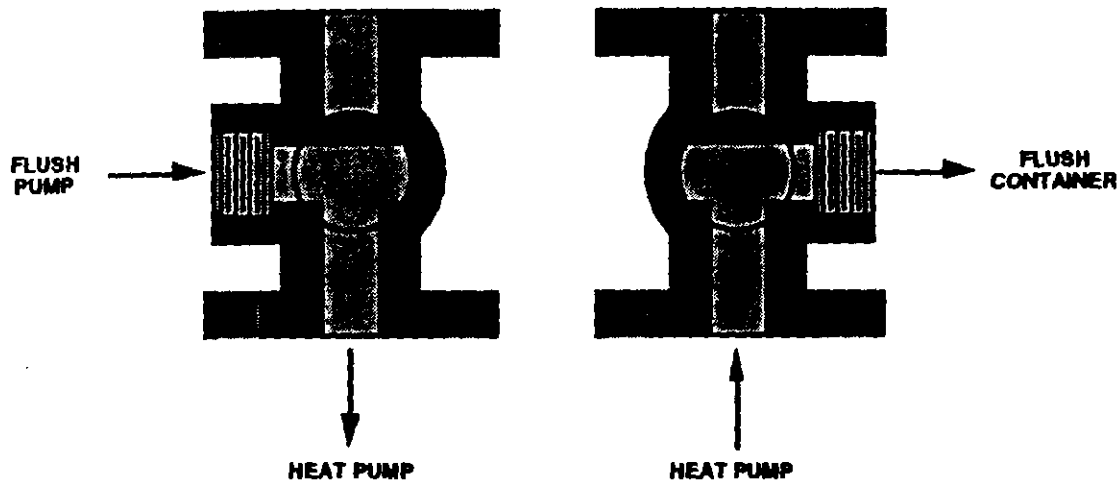
The pump discharge hose should be connected to one but not both of the 1" NPT water connections located on the sides of the module. This connection will serve to pump water into the system. Next, connect a return hose to the opposite side of the module to discharge air, debris, and water as the loop is flushed. The return hose should discharge below the container water level to monitor air leaving the system.

Fill the container with water. Start by flushing the earth loop. Rotate the module valves as shown:



Start the pump. Add antifreeze and water to the container as necessary so that no air enters the system. At first only air will come out of the return hose into the container, followed by water mixed with air and some debris, and finally nothing but water. If your flushing pump assembly is equipped with valves to reverse flow direction through the earth loop during the flushing process, do so occasionally to help remove trapped air. **WARNING** - The use of calcium as antifreeze is prohibited with Bard Manufacturing loop pump modules due to its corrosive nature, and voids all warranties if used.

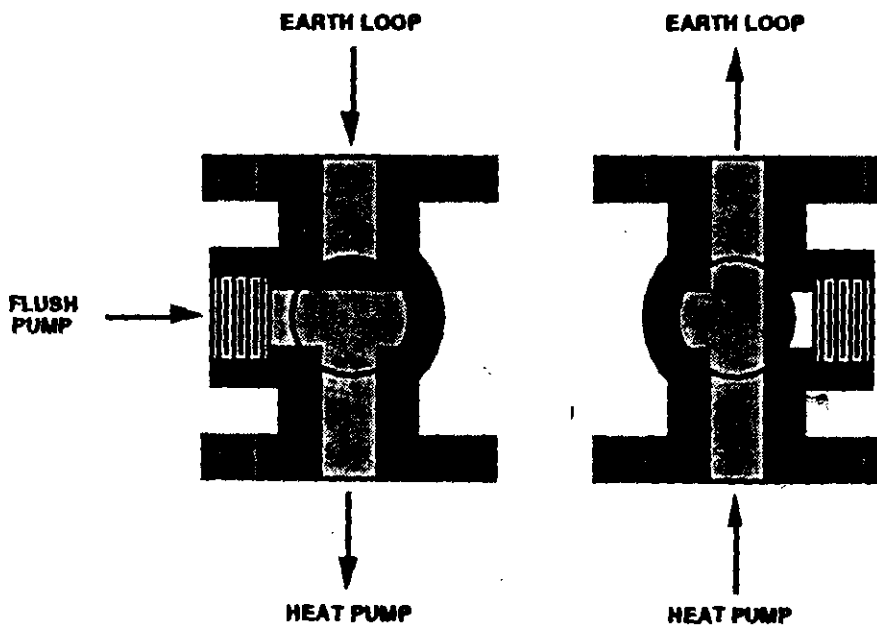
When air bubbles stop discharging into the container from the return hose, the earth loop is flushed. Next, flush the heat pump. With the pump running, rotate the module valves as shown:



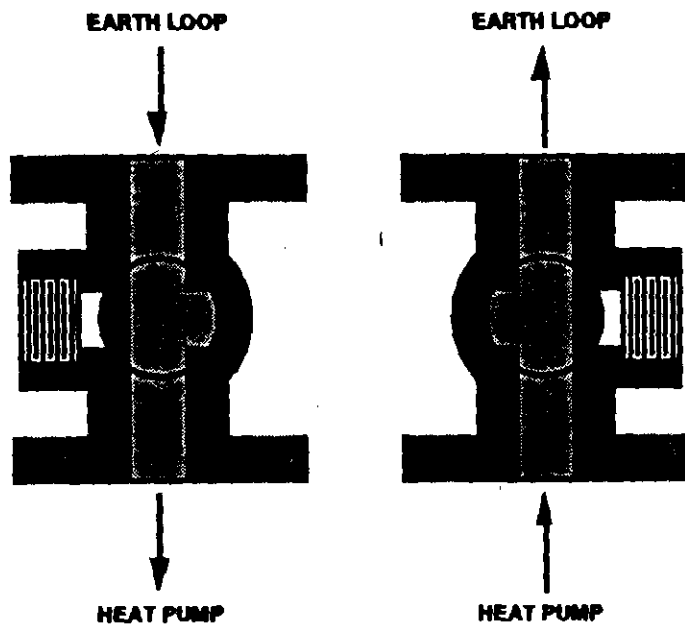
● Flush the heat pump using the same procedures as flushing the earth loop.

### Pressurizing the System

After the earth loop and heat pump are both flushed of air and debris, with the pump running, rotate only the module valve discharging into the container (the one pictured on the right) as shown:



Flow into the container should stop, and system pressure should increase quickly as the flush pump forces more water into the system. If the water level in the container falls, this indicates that air in the system is being compressed, and further purging is necessary. If purging is complete, rotate the other module valve (the one pictured on the left) as shown:



Now turn off the flush pump. The system should maintain pressure. Excess pressure can be released by momentarily rotating either module valve to allow a small volume of water to pass out of the system and into the container. Expect some initial loss of pressure due to the expansion of the earth loop pipe under pressure. However, if the system has no leaks, the pressure will stabilize.

Normal system operating pressures are 10 to 40 PSI. Positive pressure must exist at all times for the protection of the circulator(s).

Remove the flush pump hoses from the module and install the pipe plugs using thread sealant. Inspect the module for leaks.

Replace the module cover if you are installing a GPM With Cabinet module.

### **System Startup**

After flushing, filling, and pressurizing the system, start the loop pump module circulator(s) and check for proper operation. If the circulator(s) are not operating, turn off the power and diagnose the problem.

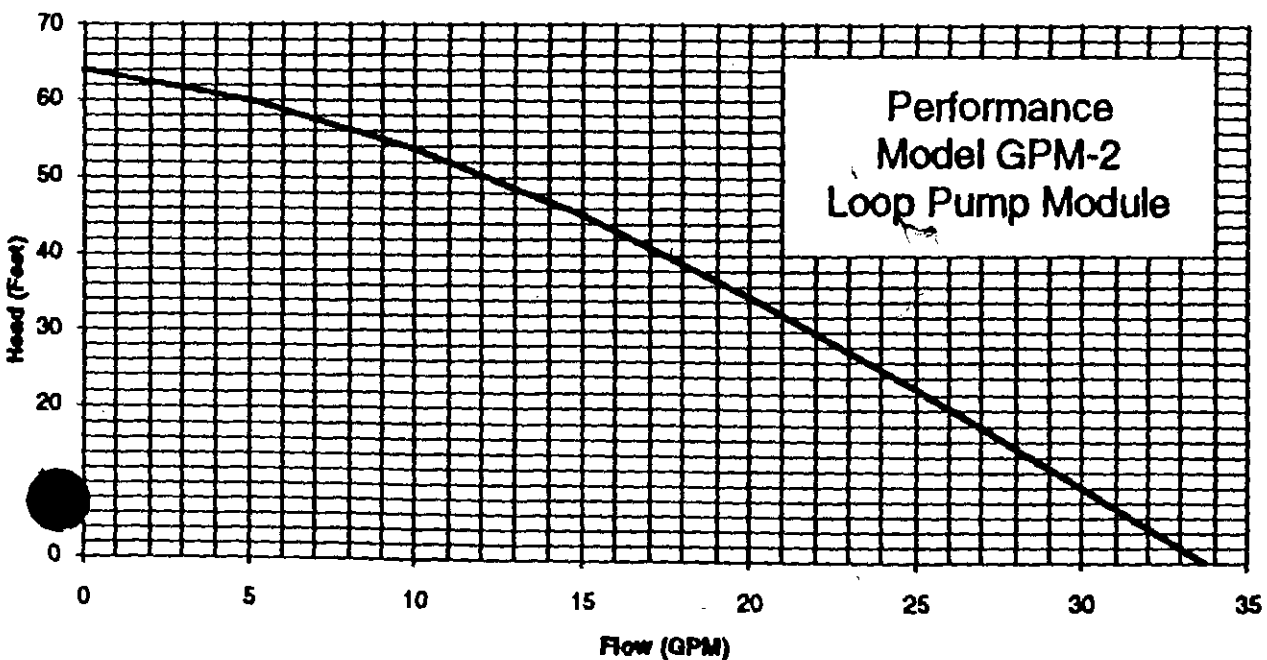
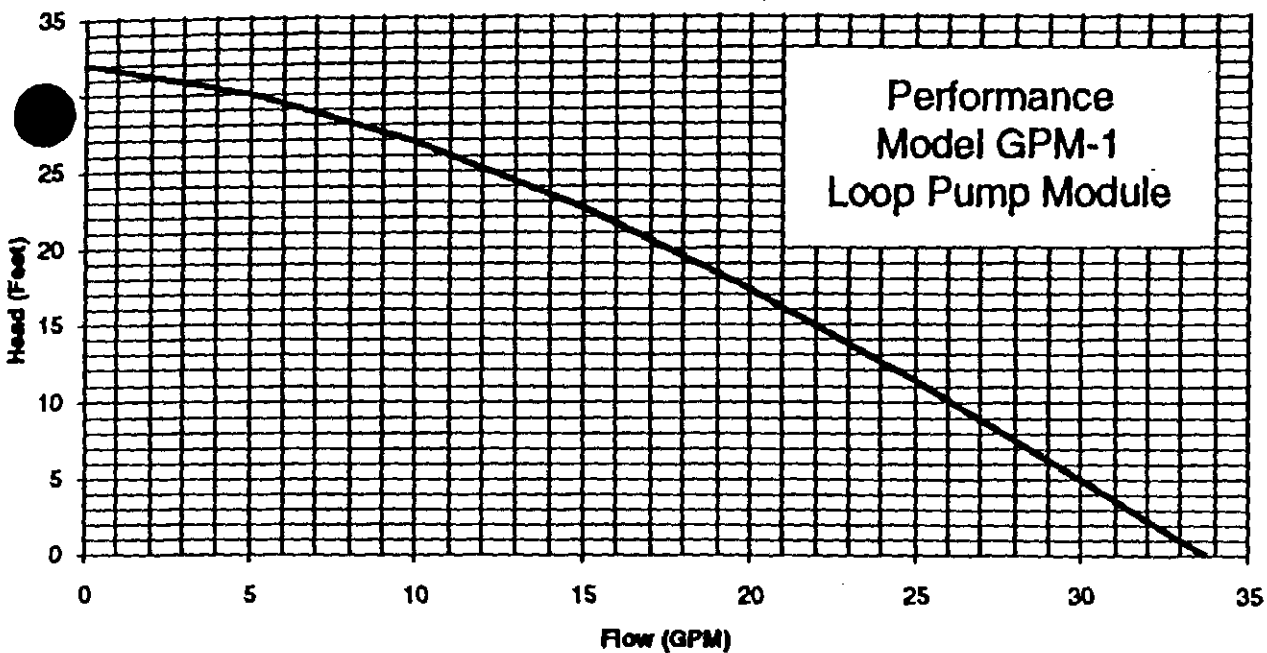
Using a single water pressure gage, measure the pressure drop at the pressure-temperature plugs across the heat pump heat exchanger. Compare the

measurement with flow vs pressure drop data supplied by Bard Manufacturing to determine the actual flow rate. If the flow rate is too low, recheck the selection of the loop pump module model for sufficient capacity. If the module selection is correct, there is probably trapped air or a restriction in the flow circuit.

### Routine Maintenance

The GPM loop pump modules do not require any routine maintenance.

### Pumping Specifications



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