

Check List for Geothermal Heatpump

The 17 items listed below are done in order to assure that you have an efficient and reliable system.

1. Heat loads using Manual J (preferably 8th edition or later) by Air Conditioning Contractors of America (ACCA) will be done to make sure that the unit is the proper size. If unit is too large it will short cycle which can cause mold, result in uneven temperatures, shorten the life of the unit and cost more to operate. If the unit is too small it will not heat or cool adequately. See the Energy Star Web Site found at www.energystar.gov and the Comfort Institute web site found at www.comfortinstitute.org.
2. Contractor to be certified to install geothermal heatpumps. Certification is from the International Ground Source Heat Pump Association (IGSHPA). www.igshpa.okstate.edu
3. Heating and Air Conditioning contractor will guarantee 70-degree space temperature at the thermostat when the outside temperature is minus 10 degrees F.
4. Heating and Air Conditioning contractor will guarantee 75 degree space temperature at the thermostat when the outside temperature is 95 degrees F. Humidity to be 60% or less.
5. Ductwork to be installed by ACCA standards. See ductwork specifications.
6. Contractor to furnish Certificate of Insurance to prove insurance coverage.
7. Contractor to furnish a copy of a business license.
8. The condensate line to the evaporator coil will be installed using PVC plastic pipe and elbows. A PVC union will be installed so that the pipe can be removed from the evaporator coil for servicing purposes.
9. On Closed loop systems a globe valve will be installed on the outlet side of the geothermal unit for the loop system so that the loop flow center system can be balanced.
10. Horizontal closed loop systems will be buried no less than 8 feet deep. Horizontal loops will be increased if the soil is sandy and or lacks moisture content.
11. If horizontal closed loop systems are installed using horizontal boring equipment the loop system will be no less than 8 feet deep and the loop system will be grouted unless the water table is above 8 feet.

12. On Closed loop systems a globe valve will be installed on the outlet side of the geothermal unit for the loop system so that the loop flow center system can be balanced.
13. If the system is an open loop system (operates off of well water) the geothermal unit will have a cupro-nickel water coil for the well water and also have provisions with tee's and valves so that the well water coil can be cleaned.

Items 14 through 19 pertain to split units, which have the geothermal unit in the basement and the air handler on an upper floor.

14. If tight bends in the refrigeration tubing are necessary for a professional job, long radius elbows will be used on the larger insulated suction line. Long radius elbows have less pressure drop and retain the efficiency of the system.
15. If high temperature Sil phos solder is used, nitrogen will be purged on the inside of the refrigerant lines while soldering to prevent copper oxide **per industry standards**.. Copper oxide is used in certain types of grinding wheels and will grind the close fitting parts of the compressor in your air conditioning unit. Note: If a unit with the newer R410A refrigerant is installed it is necessary to solder the lines with Sil Phos solder.
16. Bi-directional solenoid valves will be installed to prevent refrigerant migration on the off cycle if the air handler is more than 18 feet above the condensing unit or the refrigerant tubing length is over 40 feet.
17. When the refrigerant lines are connected between the evaporator coil (A coil) and the condensing unit the system will be pressurized to 125 PSI, all refrigerant connections are checked for leaks with soap bubbles.
18. The refrigerant lines and evaporator coil will be evacuated to 500 microns (29.90 inches of vacuum) as per the **manufacturer's instructions**. This will remove practically all of the air and reduce the boiling point of water to minus 12 degrees F. This will insure a reliable and efficient air conditioning system. This procedure will also help to determine if there are leaks in the system. **A micron vacuum gauge is required!**
19. The unit will be checked to make sure that it meets manufacturer's specifications. The following items will be checked. High pressure, low pressure, suction line temperature, supply and return loop temperature and pressure, return air temperature at the unit, supply air temperature at the unit, compressor amperes. These checks are done to make sure that the unit is operating properly and that the system is operating efficiently.

This checklist is for work being done at _____

Signed _____ Date _____
CONTRACTOR