

Air Conditioning & Heat Pumps

Description

Air conditioning energy source Air cooled Water cooled
 Through wall

Heat pump Air source Water/ground source
 Primary heating system

Age _____ **years (approximate)**

Likelihood of failure High Medium Low

Limitations

Air conditioning/heat pump systems(s) inspection limited by Outside temperature
 System not working System shut down No access to/illegible data plate Exterior unit iced up
 Exterior unit buried in snow/frozen cover Pumps not tested Refrigerant/coolant levels not determined
 Adequacy of air flow/cooling/heating performance not determined

Recommendations and Notes

Air conditioning not tested

Heat pump not tested in heating mode

Heat pump not tested in cooling mode

Air conditioning Old Not level Fins damaged/clogged Fan/compressor noisy Too low in ground
 Clear foliage from around unit Seal pipes at wall Missing insulation on pipes Not working
 Working today Cover top of exterior unit in Winter

Heat pump Old Not level Fins damaged/clogged Fan/compressor noisy Too low in ground
 Clear foliage from around unit Seal pipes at wall Missing insulation on pipes Not working
 Working today

Interior units Seal pipes at plenum Seal pipes at condensate tray/pump/floor Fan noisy Rust
 Condensate tray leaks Condensate pipes kinked/loose/leak Condensate pipes missing/poorly configured
 Missing insulation on pipes Water supply/discharge pipes leak Connected to pool

Interior unit installed **above** electric furnace or electric plenum heater. **Possible electrical hazard** from potential leaks from condensate tray/pipes.

Service air conditioning/heat pump before next season's use. Service agreement recommended

Additional Notes

Air conditioning/heat pumps (2)



Read this

Air conditioning units must not be operated when the exterior temperature is less than about 16 degrees Celsius or 61 degrees Fahrenheit or terminal damage may be caused to the compressor.

Fault conditions cannot always be determined or recreated by running the unit for a few minutes. You may for instance have to run the unit for several hours before the fault condition occurs. Unless the unit is running at the time of the inspection, a typical home inspection test may only be for ten minutes or so (to let the unit come up to operating temperature).

Be sure to read and comply with the manufacturer's instructions before each summer start up, or serious damage may occur.

We recommend that all air conditioning units are serviced regularly and that you take advantage of one of the many service contracts that are available.

Cold weather conditions prevent the testing of air conditioning units or the cooling feature of heat pump systems. You must arrange to have a service engineer test and examine the units **before use** during the next cooling season.

The plastic or vinyl covers often supplied with air conditioning units are not recommended for use in colder climates. During the winter months, moisture tends to rise inside the covers where it has no means of escape. This can cause rust to the cabinet and other metal parts inside. We recommend that you cover the top of the unit with a piece of plywood, weighted down with some bricks or rocks. This allows air circulation while still preventing snow from building up inside or on the fan blades.

When a house is equipped with individual through wall units, be sure that your contract specifies whether these air conditioning units are to be included, or not.

One ton of cooling is the equivalent of 12,000 BTU's. This handles approximately 600 square feet in a home.

Air conditioning (3)

Air conditioning units are either water cooled or air cooled.

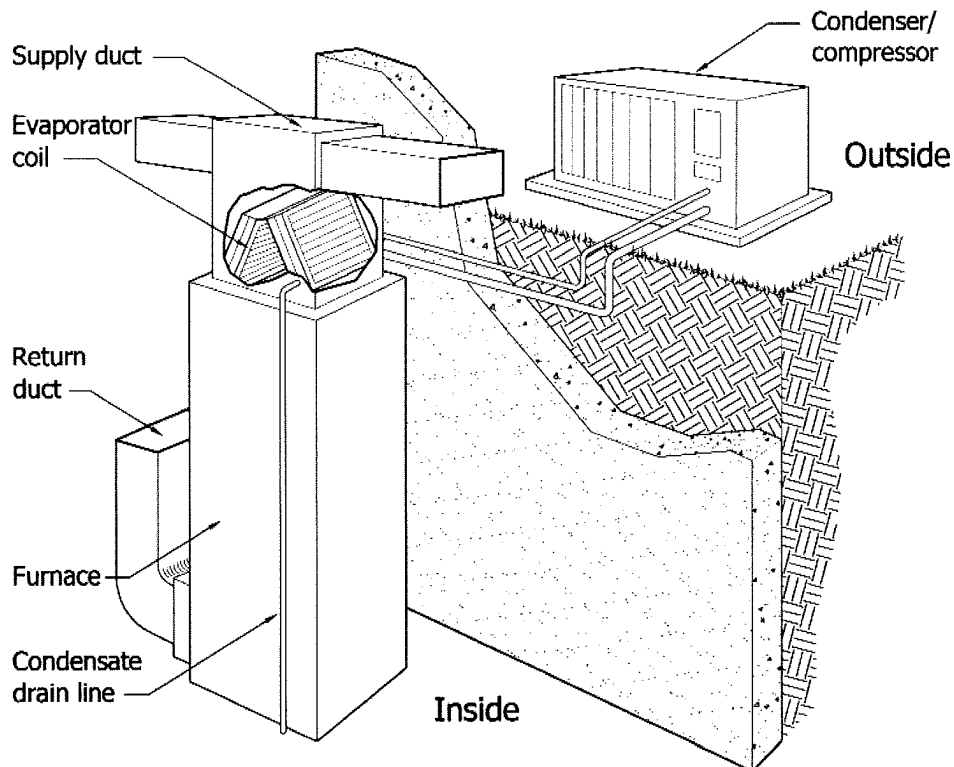
They work by dehumidifying the air inside the house and discharging the moisture into the stone under the building or into a drain. In the course of drying the air, the temperature is reduced and the combination of drying and a lower temperature creates the air conditioning effect.

Service all air conditioning and heat pump systems annually. Service agreements are recommended for all units.

It's important that all units are level. The speed of the fan rotation on tilted units can cause premature wear to the bearings.

Many air conditioning or air source heat pump systems have the insulation missing from the supply pipes between the exterior unit and the house wall. This lowers the efficiency, as does any significant fin damage to the exterior coils.

Exterior temperatures below 16 degrees Celsius (61 degrees Fahrenheit) or lower prevent use or testing.



Heat pumps (4)

Consider this:

A refrigerator cools the inside (to keep the food cold) and dumps the heat out the back into the coils. Feel the back of your fridge and it will be warm.

Similarly - an air conditioning unit cools a unit called an 'A' coil, in the ducts just above the furnace and dumps the heat outside.

Now suppose you could reverse the process - making the outside cold and dumping the heat inside. You could heat your home that way.

And that's how a heat pump works - it takes heat from the air, the ground or from well water and dumps it into the house ducts. Remembering back to your Physics 101 you will (hopefully) recall that you can remove heat from things right down to absolute zero.

So even though water might be at 48 degrees Fahrenheit or air at minus five, we can still extract some heat from it and move it into the house.

Then in the summer - a special reversing valve allows us to move heat from the house - outside - which is of course - air conditioning.

Heat pumps are expensive to buy but they have low running costs. You need to be careful about buying one in replacement for a more typical furnace or for a new home, as it may take you many years to recover the capital cost by way of heat cost savings.

Ensure all heat pumps are serviced annually. Take advantage of one of the service contracts available.

Most heat pump systems have an electric back up installed into the furnace ducts. Typically it's called a **plenum heater** and acts like a small electric furnace.

The plenum heater kicks in whenever the heat pump can't keep up with the heat demand (when you suddenly crank up the thermostat by ten degrees for instance) or when the heat pump is in defrost mode.

Because a heat pump uses low grade heat - it needs to run a lot of the time and for that reason, you can't use it with a programmable thermostat.