HOW TO DETERMINE WATTAGE REQUIREMENTS AND INSTALL BASEBOARD HEATERS

The wattage required to adequately heat an area with baseboard heaters can be determined by using one of two simple formulas. If a heat loss calculation is desired or required for your job, assistance in formulating one can usually be acquired at an office of the serving utility company.

FOR LIVING AREAS: Such as living rooms, family rooms, dens, dining rooms, party rooms:

(Length of Room) X (Width of Room) X (Height of Ceiling) X (2) = Desired Wattage

FOR NON-LIVING AREAS: Such as bedrooms, utility rooms, kitchens

(Length of Room) X (Width of Room) X (Height of Ceiling) X (1-1/2) = Desired Wattage

OR — if all ceilings in the house are 8 feet high, you may want to use these formulas:

FOR LIVING AREA:
(Length) X (Width) X (16) = Desired Wattage

FOR NON-LIVING AREA:

(Length) X (Width) X (12) = Desired Wattage

After the desired wattage is determined, round up or down to the nearest available size from the list below which shows the standard wattages and corresponding sizes of heaters:

500 watts - 2' long	1,500 watts - 6' long
750 watts - 3' long	2,000 watts - 8' long
1,000 watts - 4' long	2,500 watts - 10' long

Let's take an example of a den that is 10' by 12' with 8' ceilings. We find the desired wattage to be 1,920 watts and would recommend using an 8' long, 2,000 watt heater.

Baseboard heaters have a low output of 250 watts per foot of element that allows them to operate at a much lower temperature than many heaters manufactured in the past. This keeps objectionable soil deposits on the wall directly above the heater to a minimum. They are extremely safe to use. A cutout switch shuts off the heater when the temperature begins to rise due to any stoppage of air circulation through the heater. A sensing tube runs the entire length of the element to assure full protection. This limit switch is set well below the ignition point of tissue paper.

It is preferable to position heaters under windows as this creates a heat barrier where most cold enters, keeps the windows dry, and is less likely to be blocked completely by furniture. The warm air rising from the baseboard will heat the cold air in front of the window and create a convection current which helps to distribute heat throughout the room. In long, narrow rooms it is sometimes better to locate smaller heaters at each end rather than using a single larger unit. This will provide better distribution of heat and a more even temperature in all parts of the room.

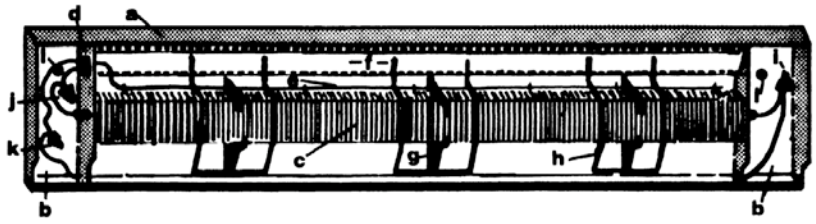
Heaters should be mounted at least 3/4" off the floor. Fasten them to the wall using wood screws if you are able to locate the studs. Use molly screws or wing toggle bolts if securing to wallboard. Oblong shaped knockouts are located in several positions along the back of heater for use when mounting the heater to the wall. Be careful not to injure the element or overheat protector tube while making the installation.

Circuit wiring can enter either end of the heater at the back, bottom, or side. The most common entry is through the floor and into the bottom of the heater. Wires must be secured where they enter the heater by using a cable clamp.

(over)

WIRING TO BASEBOARD HEATERS

PARTS OF A BASEBOARD

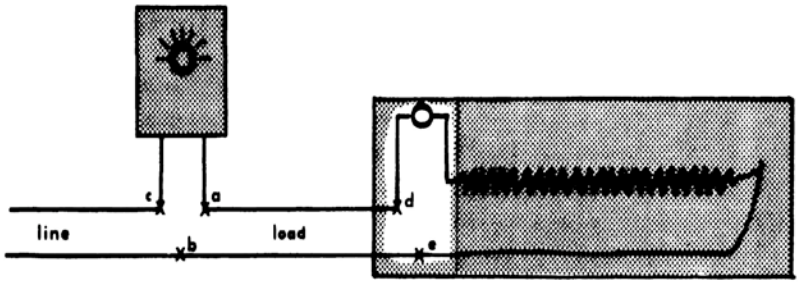


- **A** -Heater case
- **B** -Wiring compartments
- **C** -Element
- **D** -Overheat protection switch
- **E** -Sensing tube for cut-out
- **F** -Heat deflector shield
- **G** -Element and front support brackets
- **H** -Heat deflector support brackets
- **I** -Splice at resisted element lead and return element lead
- **J** -Splice at resisted element lead and cut-out lead
- **K** -Splice at other cut-out lead and return element lead
- **L** -Ground wire connection screws

Wiring a standard 230 volt baseboard heater is a simple job. Most residential wiring requires only regular Romex wire of 12/2 with ground or 10/2 with ground, either of which is quite easy to work with. Wire can enter and connection can be made at either end of the heater. If connection is made at the left end of the heater, a twist-off wire nut can be removed to provide the two element leads necessary to make the hook-up. If the connection is to be made at the right end, the element leads will have to be separated by cutting apart the crimp connector splice (see "J" and "I" in the diagram above).

The wiring of a line voltage thermostat can best be explained as similar to that of a comparable light switch. The single pole stat is the most commonly used model and switches only one line of the circuit as the room temperature changes. When adjusted to the lowest setting single pole thermostats will come on at approximately 40 degrees. Double pole models switch off both power leads and provide a positive off when set to the lowest position. The following diagrams depict the most common thermostat wiring.

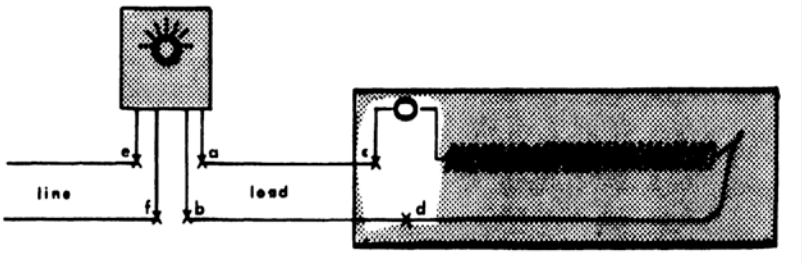
WALL OR BASEBOARD MOUNT SINGLE POLE



If a second heater is to be controlled by a single pole thermostat, the wires serving the second heater can be connected at splices (A) and (B) or (D) and (E). If the thermostat is mounted directly onto the heater, we do not recommend operating a second heater with it.

If controlling a second heater with a double pole thermostat, the wires serving the second heater can be connected at splices (A) and (B) or (C) and (D).

WALL OR BASEBOARD MOUNT DOUBLE POLE



NOTE! When wiring for two or more heaters on a circuit when each is controlled by its own thermostat, the connection for the wires serving the second heater can be made at your splices (C) and (B) in the single pole thermostat diagram at (E) or (F) if the double pole diagram is being followed.

These "How-To-Do-It" sheets have been reviewed in June 2007 by a professional Engineer. If you find a problem, please notify G & G Electric & Plumbing at 1900 NE 78th Street, Ste. 101, Vancouver, Washington 98665