

# Comfort Heaters

## Application Guidelines

### • Methods of Heat Transfer

### • Convection Heating

### • Forced Air Heating

### • Radiant Heating

### • Heat Requirements

### • Application Tips

## Applications

**Methods of Heat Transfer** — To understand which method of comfort heating best meets your application it is important to understand the basic methods of heat transfer. Heat transfer is accomplished by **Conduction**, **Convection** or **Radiation**.

**Conduction** is defined as transferring heat through a conducting medium by way of direct contact.

**Convection** heat involves using a source of heat to warm the air and create a desired comfort level around people. Heated air is circulated by fans or blowers to generally surround a normally enclosed area. Home heating with a forced-air furnace is an example of convection heat.

**Radiant or Infrared** heat uses invisible electromagnetic waves from an energy source. The perfect example of electro-magnetic infrared energy is heat from the sun. In an infrared system, these energy waves are created by a heat source - quartz lamp, quartz tube, metal rod - which are directed by optically designed reflectors toward or onto the object or person. A fireplace is a familiar form of radiant heat.

### Reasons to Use Convection Heating:

- Small Spaces and Rooms
- Quiet Operation
- Special Purposes like Cranes and Pump Rooms.

### Reasons to Use Forced Air, Blower Heating:

- High Heat Output in a Small Space
- Large Areas Require Air Movement to Distribute Heat
- Primary and Supplemental Heating.

### Reasons to Use Radiant Heating:

- Gives Sunshine Like Warmth
- Heats People and Objects rather than Air or Space
- Good for Supplemental Heating.

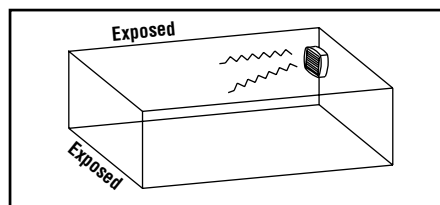
**Determining the Heat Requirement** — To get an approximate sizing of the heating requirements for a room, the following guide may be utilized. For a more detailed analysis it is recommended that the ASHRAE guidelines be followed when performing an analysis for a complete building. Your Local Chromalox Sales office can assist you in sizing your application with a computer sizing tool that is designed to perform room-by-room heat loss estimates. When sizing the job, the first step is to determine the construction data and sizing requirements. You will need to collect the following information:

- Voltage and phase
- Length, width and height of building
- R-factor for ceilings and walls
- Air changes or how much fresh air is brought in per hour
- Outside lowest temperature
- Desired inside temperature
- Size and number of windows and doors.

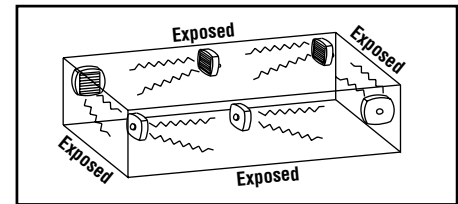
If a quick estimate is sufficient, then consult the Comfort Heating Chart in the Technical section of this catalog.

## Application Tips

**Small Rooms** can be heated by a one (1) unit heater. Where two (2) walls are exposed, heater should be mounted as shown.



**Large Rooms** require multi-unit installations. Number and capacity of units will be determined by volume of building and square feet of floor area to be heated. Arrange units to provide perimeter air circulation.



**Air Volume** — To prevent air stratification, total CFM capacity of all units should circulate the room air volume at least 3 times per hour. Units should be located so their air streams wipe exposed walls without blowing directly at them.

**In Multiple Unit Heater Installations** locate units so each unit supports the air stream from another, thus setting up circulatory air movement.

**In Warehouse Type Applications** for maintaining minimum temperature, one or more large heaters can be used to reduce initial installation expense.

**For Individual Space** total heating capacity is calculated in the conventional way, using formulas in the ASHRAE "Guide" or those found in the NEMA handbook.

**For Pedestrian Entryways** when heating capacity is not known, a "rule of thumb" is 5000 watts per door.

**Loading Docks** — Unit heaters are used to combat cold air inrush when loading dock doors are opened. For such applications, one or more units should be arranged to blow warm air across the opening, not toward it.

**Harsh and Special Environments** may require corrosion resistant and/or explosion proof heaters — see the Selection Guidelines on the following page.

**Often a Portable Heater** or heaters can solve a unique comfort heating situation temporarily or help determine the requirement for permanently located heaters to achieve the desired comfort levels.

**Controls and Thermostats** are vital to solving a heating situation. See the Controls section of this catalog for more information, especially type WR80, WR90, WT, WTL, WR80-EP, WCRT and RTC thermostats.