

TABLE 1. SMALL-TUBE CAST-IRON RADIATORS

NUMBER OF TUBES PER SECTION	CATALOG RATING PER SECTION ^a	SECTION DIMENSIONS				
		A Height ^c	B Width		C Spacing ^b	D Leg Height
			Minimum	Maximum		
	Sq Ft	In.	In.	In.	In.	In.
3d	1.6	25	3 $\frac{1}{4}$	3 $\frac{1}{2}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
4d	1.6	19	4 $\frac{1}{16}$	4 $\frac{13}{16}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	1.8	22	4 $\frac{1}{16}$	4 $\frac{13}{16}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	2.0	25	4 $\frac{1}{16}$	4 $\frac{13}{16}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
5d	2.1	22	5 $\frac{5}{8}$	6 $\frac{5}{8}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	2.4	25	5 $\frac{5}{8}$	6 $\frac{5}{8}$	1 $\frac{3}{4}$	2 $\frac{1}{2}$
6d	1.6	14	6 $\frac{13}{16}$	8	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	2.3	19	6 $\frac{13}{16}$	8	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	3.0	25	6 $\frac{13}{16}$	8	1 $\frac{3}{4}$	2 $\frac{1}{2}$
	3.7	32	6 $\frac{13}{16}$	8	1 $\frac{3}{4}$	2 $\frac{1}{2}$

^a The square foot of equivalent direct steam radiation is defined as the ability to emit 240 Btu per hour with steam at 215 F. in air of 70 F. These ratings apply only to installed radiators exposed in a normal manner; not to radiators installed behind enclosures, grilles, etc. (See A.S.H.V.E. Code for Testing Radiators adopted January, 1927.)

^b Length equals number of sections times 11 in.

^c Over-all height and leg height, as produced by some manufacturers, are one inch (1 in.) greater than shown in Columns A and D. Radiators may be furnished without legs. Where greater than standard leg heights are required this dimension shall be 44 in.

^d Or equal.

Practice Recommendation R174-43 for small-tube cast-iron radiators. Table 1 shows the size and dimensions now being manufactured.

Wall radiators are now rated in terms of equivalent square feet, the same as small-tube radiators. Tests have shown that the heat emitted from a wall-type radiator may be reduced from 5 to 10 per cent if the radiator is placed near the ceiling with the bars horizontal and in an air temperature exceeding 70 F. When radiators are placed near the ceiling, there is usually such a large difference in the temperature between the floor level and the ceiling that it becomes difficult to heat the living zone of the rooms satisfactorily.

Pipe coils are assemblies of standard pipe or tubing (1 in. to 2 in.) which are used as radiators. In older practice these coils were commonly used in factory buildings, but are not often found in this service today. When

TABLE 2. HEAT EMISSION OF PIPE COILS PLACED VERTICALLY ON A WALL (PIPE HORIZONTAL) CONTAINING STEAM AT 215 F AND SURROUNDED WITH AIR AT 70 F

Btu per linear foot of coil per hour (not linear feet of pipe)

Size of Pipe	1 In.	1 $\frac{1}{4}$ In.	1 $\frac{1}{2}$ In.
Single row	132	162	185
Two	252	312	348
Four	440	545	616
Six	567	702	793
Eight	651	796	907
Ten	732	907	1020
Twelve	812	1005	1135

coils are used, the miter type assembly is preferable as it readily permits expansion in the pipe.

The heat emission of pipe coils placed vertically on a wall with the pipes horizontal is given in Table 2 which has been developed from available data and does not represent definite results of tests. For such coils the heat emission varies as the height of the coil. The heat emission of each pipe of ceiling coils, placed horizontally, is about 126 Btu, 156 Btu, and 175 Btu per linear foot of pipe, respectively, for 1-in., 1 $\frac{1}{4}$ -in., and 1 $\frac{1}{2}$ -in. coils.

CONVECTORS

Cast-iron radiators may be concealed in a cabinet or other enclosure for appearance. In such cases a greater percentage of heat is conveyed to the room by convection thereby resulting in a form of gravity convector. A

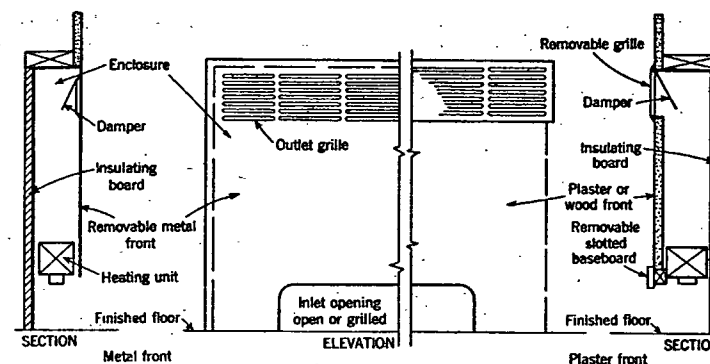


FIG. 1. TYPICAL RECESSED CONVECTOR

typical recessed convector is shown in Fig. 1. The heating element consisting of a large percentage of fin surface is usually shallow in depth and placed low in the enclosure in order to produce maximum chimney effect in the enclosure. The air enters the enclosure near the floor line just below the heating element, is heated moderately in passing through the core and is delivered to the room through an opening near the top of the enclosure. This air movement accomplishes a reduction in temperature differentials and tends to assure maximum comfort in the living zone.

Concealed heaters or convectors are generally available as completely built-in units. Combinations are available in several styles for installations, such as the wall-hung type, free-standing floor type, recess type set flush with wall or offset, and the completely concealed type. Most of these types may be arranged with a top outlet grille in a plane parallel with the floor, although the front outlet is practically standard. In cases where enclosures are to be used but are not furnished by the heater manufacturer, it is important that the proportions of the cabinet and the grilles be so designed that they will not impair the performance of the assembled convector. It is desirable that the enclosure or housing for the convector fit as snugly as possible so that the air to be heated cannot by-pass the heating element in passing through the enclosure.

The output of a convector, for any given length and depth, is a function