Calculation Example

Determine the maximum demand for four ranges each rated at 15 kW.

Solution

Step 1. Determine amount of rating above 12 kW:

15 kW − 12 kW = 3 kW

Step 2. Calculate the required demand increase:

5% per kW × 3 kW = 15%

Step 3. Calculate the maximum demand:

17 kW (Column C demand value for 4 ranges) × 115% = 19.55 kW

Table Note 2. If ranges in a group installation have different ratings over 8¾ kilowatts through 27 kilowatts, the ratings are added together to determine the average rating and the maximum demand. The demand in Column C must be increased if the average rating is over 12 kilowatts. If the ratings are the same, refer to Note 1.

Table Note 3. For a group installation of ranges with ratings over 1¾ kilowatts through 8¾ kilowatts, the ratings are permitted to be added together for determining a demand factor. Ranges rated below 3½ kilowatts should be grouped independently of those rated 3½ kilowatts and above. The appropriate column (A or B) is used rather than Column C.

Calculation Example

Determine the maximum demand for four ranges rated at 8 kW, 10 kW, 15 kW, and 18 kW.

Solution

Step 1. Total the range ratings:

12 kW (minimum value for 8 kW range) + 12 kW (minimum value for 10 kW range) + 15 kW + 18 kW = 57 kW

Step 2. Calculate the average rating:

57 kW ÷ 4 ranges = 14.25 kW

Step 3. Determine amount of rating above 12 kW:

14.25 kW − 12 kW = 2.25 kW

Step 4. Calculate the required demand increase:

5% per kW × 2 kW (0.25 kW is not a major fraction) = 10%

Step 5. Calculate the maximum demand:

17 kW (Column C demand value for 4 ranges) × 110% = 18.7 kW

Calculation Example

Determine the maximum demand for four ranges rated at 4.5 kW, 5 kW, 5 kW, and 8.5 kW.

Solution

Step 1. Combine ratings into single value:

4.5 kW + 5 kW + 5 kW + 8.5 kW = 23 kW

Step 2. Determine demand factor:

50% (Column B, 4 ranges)

Step 3. Calculate the maximum demand:

23 kW × 50% = 11.5 kW

Table Note 4. The branch-circuit load for one range is permitted to be computed by using either the nameplate rating of the appliance or Table 220.55. A counter-mounted cooking appliance has a smaller load rating than does a full-sized range with an oven. If a single branch circuit supplies a counter-mounted cooking unit and not more than two wall-mounted ovens, all of which are located in the same room, the nameplate ratings of the appliances can be added, and the total treated as the equivalent of one range. For feeder demand factors other than dwelling units (commercial electric cooking equipment, dishwasher booster heaters, water heaters, etc.), see Table 220.56.

Where a counter-mounted cooking appliance like the one illustrated in Exhibit 210.23 is used with a separate wall oven, it is permissible to run a single branch circuit to the kitchen and supply each with branch-circuit tap conductors installed as specified in 210.19(C), Exception No. 1.

Calculation Example

Calculate the load for a single branch circuit that supplies the following cooking appliances:

- One counter-mounted cooking unit with rating of 8 kW
- One wall-mounted oven with rating of 7 kW
- A second wall-mounted oven with rating of 6 kW

Solution

Step 1. Combine the ratings of the cooking appliances:

8 kW + 7 kW + 6 kW = 21 kW

Step 2. Determine amount of rating above 12 kW (see Table 220.55, Note 1):

21 kW − 12 kW = 9 kW

Step 3. Calculate the demand increase required by Table 220.55, Note 1:

5% per kW × 9 kW = 45%