

- Answer: (a) 44 kVA
- (a) General Lighting (1,500 sq ft × 3 VA) 4,500 VA
- (b) Small Appliance Circuits 3,000 VA
- (c) Laundry Circuit 1,500 VA
- 9,000 VA × 12 units × 0.41 = 44,280 VA

Note: The washing machine is calculated as part of the 1,500 VA laundry circuit.

Air-Conditioning Versus Heat Load

Using the optional calculations, what is the demand load for the building air-conditioning versus heat?

- (a) 52 kVA (b) 60 kVA (c) 30 kVA (d) 25 kVA

• Answer: (d) 25 kVA [220.32]

A/C (3-hp) 230V × 17A [Tbl 430.148] 3,910 VA

Compressor (1/8-hp) 230V × 1.45A* [Table 430.148] 334 VA

*One-half the value of a 1/4-hp motor 4,244 VA × 12 units × 0.41 = 20,880 VA, omit

Heat [220.15]: 5,000W × 12 units = 60,000 VA × 0.41 = 24,600W.

Appliance Demand Load

Using the optional calculations, what is the demand load for the appliances?

- (a) 41 kVA (b) 53 kVA (c) 33 kVA (d) 27 kVA

• Answer: (d) 27 kVA [220.32]

Water Heater 4,000 VA

Dishwasher 1,500 VA

5,500 VA × 12 units = 66,000 VA × 0.41 = 27,060 VA

Note: The washing machine is calculated as part of the laundry circuit.

Dryer Demand Load

Using the optional calculations, what is the demand load for the 4.5 kVA dryer?

- (a) 60 kW (b) 25 kW (c) 55 kW (d) 22 kW

• Answer: (d) 22 kW

4.5 kW* × 12 units × 0.41 = 22.14 kW

* Nameplate rating.

Range Demand Load

Using the optional calculations, what is the demand load for the 14.4 kW ranges?

- (a) 71 kW (b) 42 kW
(c) 78 kW (d) 67 kW

• Answer: (a) 71 kW

14.4 kW × 12 units × 0.41 = 70.85 kW

Service Conductor Size

If the total demand load equals 189 kVA, what is the service conductor size? Service is 120/240V, 1Ø. Figure 10-3.

- (a) 600A (b) 800A
(c) 1,000A (d) 1,200A

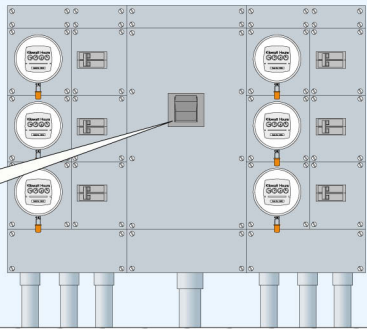
• Answer: (b) 800A

$I = VA/E$

$I = 189,000 \text{ VA}/240\text{V}$

$I = 788\text{A}$

**Multifamily Dwelling
Size of Service
Table 310.16**



Service Demand Load of 189 kVA

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Determine size of service.

Convert VA into amperes, $I = VA/E$
 $VA = 189 \text{ kVA} \times 1,000 = 189,000 \text{ VA}$
 $E = 240\text{V single phase (given)}$

$I = \frac{VA}{E} = \frac{189,000 \text{ VA}}{240\text{V}} = 788\text{A}$

Table 310.15(B)(6) does not apply to services over 400A.

Figure 10-3

Multifamily Dwelling – Size of Service