

## Determining the right size generator

To select an engine-driven generator, you'll need to determine the power (kilowatt) requirements which must be met under operating conditions.

Undersizing the generator can be avoided by considering all of the loads that will be connected to the generator, and by determining the starting requirements (motor start) of electric motor-operated devices.

Be sure the generator you select is large enough to handle your present requirements and anticipated needs.

To determine the right size generator, add up the total watts of all lights, appliances, tools, or other equipment to be connected to the generator.

Check the nameplates to determine wattage. If wattage is not shown, but amps and volts are given, the following simplified formula may be used:

Amps x Volts = Watts

(Ex. 12.5 amps x 120 volts = 1,500 watts)

To determine kilowatts (kW), use the following formula:

1,000 Watts = 1 Kilowatt

(Ex. 1,500 Watts/1,000 = 1.5 kW)

Charts 1, 2, and 3 shown will help you in selecting the proper size generator. With

### **Equipment Wattage**

Air conditioner, 10,000-Btu 2,000–3,000

Blanket, electric 150

Broiler 1,400

Clothes dryer, electric 5,000–10,000

Coffee maker 850

Dishwasher 1,500–2,500

Fan, attic 375

Fan, furnace 800–1,200

Fan, window 200

Freezer, food 300–500

Heater, radiant 1,300

Hot plate 1,250

Refrigerator/freezer 600–2,000

Sump pump 400–3,000

Toaster 1,100–1,700

TV, color 100–350

Water heater 3,000–4,500

Water pump 1,000–3,000

**Equipment Wattage**

Blower, electric  $\frac{1}{2}$ –3 hp

Compressors  $\frac{1}{4}$ –3 hp

Concrete vibrators,  $\frac{3}{4}$ -hp 840

Concrete vibrators, 1-hp 1,080

Concrete vibrators, 2-hp 1,560

Concrete vibrators, 3-hp 2,400

Drain cleaners 250

Drills,  $\frac{1}{4}$ -in. 250–600

Drills,  $\frac{3}{8}$ -in. 300–600

Drills,  $\frac{1}{2}$ -in. 350–1,200

Drills, 1-in. 1,000

Grinders, bench  $\frac{1}{4}$ –1 hp

Grinders, portable 1,000–2,500

Hammers, demolition 1,260

Hammers, rotary 1,200

Heaters, space  $\frac{1}{4}$ –2 hp

Lights check wattage on bulb

**Equipment Wattage**

Pump, electric  $\frac{1}{2}$  hp and up

Routers 900–1,100

Sanders, belt 600–1,500

Sanders, disc 1,200

Sanders, orbital 250

Saws, chain 800–1,500

Saws, circular, 6-in. 1,000–2,500

Saws, cutoff 2,500

Saws, jig 200–800

Saws, masonry 2–5 hp

Saws, radial arm 1–5 hp

Saws, table 1–3 hp

Screwdrivers 550

Shears, metal-cutting 750

Wrenches, impact,  $\frac{1}{2}$ -in. 600

Wrenches, impact,  $\frac{3}{4}$ -in. 720

Wrenches, impact, 1-in. 1,200

Chart 3: *Motor starting requirements*

**Watts required to start motor**

**Running Repulsion Split**

**Motor (hp) watts induction Capacitor phase**

$\frac{1}{8}$  275 600 850 1,200

$\frac{1}{6}$  275 600 850 2,050

$\frac{1}{4}$  400 850 1,050 2,400

$\frac{1}{3}$  450 975 1,350 2,700

$\frac{1}{2}$  600 1,300 1,800 3,600

¾ 850 1,900 2,600 —  
 1 1,100 2,500 3,300 —

Chart 4: *Insulated copper wire size*

**Load in watts Maximum allowable cable length**

**Current at at**

**in 120 240 #4 #6 #8 #10 #12 #14 #16 #18**

**amperage volts volts wire wire wire wire wire wire wire wire**

2.5	300	600	—	—	—	1,000	600	375	250	150
5.0	600	1,200	—	—	—	500	300	200	125	75
7.5	900	1,800	—	—	—	330	200	125	80	50
10.0	1,200	2,400	—	625	400	250	150	100	50	35
15.0	1,800	3,600	650	400	265	165	100	50	—	—
20.0	2,400	4,800	500	300	200	125	80	—	—	—
25.0	3,000	6,000	400	250	150	100	—	—	—	—
30.0	3,600	7,200	325	200	125	—	—	—	—	—
35.0	4,200	8,400	275	175	100	—	—	—	—	—
40.0	4,800	9,600	250	150	—	—	—	—	—	—
45.0	5,400	10,800	225	—	—	—	—	—	—	—
50.0	6,000	12,000	200	—	—	—	—	—	—	—

lights, heaters, and small appliances, simply add the nameplate ratings or see Chart 1 for average wattage requirements. For portable electric tools and equipment, check the nameplate rating or use Chart 2 for average requirements. If watts and/or amps are not given and only the horsepower is shown, use Chart 3 to determine the starting and running watts.

Chart 4 is furnished as a guide for selecting the proper size of insulated copper wire when extension cables are used. We recommend the use of outdoor-rated (U.L.) cable, recognized type SJTW-A.

Chart 1: *Home applications — approximate wattage requirements*

Chart 2: *Portable electric tools — approximate wattage requirements*

*These are suggested guidelines only, please contact a qualified electrician or licensed contractor for assistance.*