Home Repair Resource center

HOMEOWNER REPAIR GUIDE

PROPER FUSE RATING TO WIRE SIZE

WIRE GAUGE (COPPER)	FUSE RATING	COMMENT
22 gauge (ga.)	--	24 volt thermostat, 10-16 volt doorbell
18 ga.	--	Lamp cord, low voltage equipment
16 ga.	--	Lamp cord, low volt sound system wiring (to speakers, etc.)
14 ga.	15 Ampere (amp)	Common old house wiring (knob and tube)
12 ga.	20 amp	Common residential circuit wiring
10 ga.	30 amp	Electric dryer (under 20 feet length)
8 ga.	30 to 45 amp	Electric dryer (over 20 feet length)
6 ga.	50 to 60 amp	Electric range, power feed to subpanel, heat pump or A/C unit
4 ga.	70 to 85 amp	Service entrance wire on old 60 amp main service panel, also used for grounding
2 ga.	95 to 115 amp	Service entrance wire for 100 amp main service panel
1 ga.	110 to 130 amp	Service entrance wire for 125 amp main service panel
2/0 ga.	145 to 170 amp	Service entrance wire for 150 amp main service panel
3/0 ga.	165 to 200 amp	Service entrance wire for 200 amp main service panel

HOW TO FIGURE THE ELECTRICAL LOAD ON YOUR CIRCUITS

A couple of simple formulas (part of **Ohm's Law**) are used to calculate various electrical problems.

TO FIND AMPERAGE

You divide wattage by voltage.

amps = watts ÷ volts

Example: For a lighting circuit with twenty-four 100-watt incandescent bulbs (2400 watts), and a house voltage of 120 volts: 2400 watts ÷ 120 volts = 20 amps.

If this circuit is constructed with 14 gauge wire, the maximum allowed amperage rating of 15 amps would be exceeded, causing the fuse to blow.

TO FIND WATTAGE

You multiply amperage by voltage.

watts = amps × volts

Example: To find the maximum wattage that a 14 gauge wire circuit can safely accommodate: 15 amps x 120 volts = 1800 watts.

WHY FUSE SIZE MATTERS

A correctly fused circuit will not overheat if an overload occurs; the fuse will "blow," or the circuit breaker will trip. If a circuit is over-fused, an overloaded wire can heat up enough to burn the insulation and start a fire in the walls.

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Home Repair Resource Center empowers homeowners to maintain their homes for sustainable and diverse communities.

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