

# Add new outlet

<http://waterheatertimer.org/How-to-wire-switches.html#add>

1) Electric Code generally says Maximum 12 boxes per electric circuit controlled by 1 circuit breaker.

If you have more boxes, then house can fail inspection IF inspector finds problem.

But it is minor problem when wire size, breaker size, and amp loads are safely matched.

2) Reason for code: so there is no power loss to last box when other electrical devices are drawing power from same circuit.

This situation can cause overheating of circuit and trip breaker, and cause heat damage to some electronic devices and motors and shorten life of main breaker panel busbar.

<http://waterheatertimer.org/See-inside-main-breaker-box.html>

3) In practical terms, if you are adding outlets to run a few light bulbs and a convenience outlet for vacuum cleaner, then there is likely no problem.

However if you are adding plugs so you can run shop tools, or blower motor, or compressor etc, then that can be a problem.

For example if wire is too long, there will be power loss to motor which will cause motor overheating and shorten life of equipment. Plus overheat wire causing breaker to trip.

4) Solution.

Calculate total amps and watts expected on that circuit.

Add up watts of everything running at same time.

5 light bulb @ 60 watts each = 300 watts

Look at nameplate on appliance. Microwave, and toaster oven @ 1500 watts each = 3000 watts

Basic formula: Volts x amps = watts

120 volt microwave uses 1500 watts, how many amps?

Amps = watts divided by volts, so 1500 watts divided by 120 volts = 12.5 amps.

Before adding outlets, check that you have correct wire and circuit breaker for expected amps.

Compare total expected amp usage to charts on following link.

<http://waterheatertimer.org/Color-codewire.html>

Basic rule for wires and breaker:

Oversizing wire and breaker are good idea.

Undersized wire and breaker will trip breaker and cause possible damage to electrical devices.

Mismatched wire and breaker are dangerous.

