

1) Copy following links:

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

<http://waterheatertimer.org/images/Inside-Main-Breaker-Box-8-8.jpg>

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

2) Double-pole circuit breaker snaps down over both hot busbars.

Each busbar supplies 120Volts, and each busbar is out-of-phase with the other busbar.

Together, the two 120volt out-of-phase wires have 240Volt potential.

3) Does the double-pole breaker act as a jumper?

No.

Typically a 'jumper' wire bonds two electrical connections together so power flows between the things that are jumpered together.

If you 'jumper' one busbar to the other busbar in live 240V split phase panel, it will short out.

4) 240Volt circuit requires two hot wires. One hot from each busbar.

When the two hots are applied to two screws on a heating element, that action will complete circuit, and element will heat.

Instead of shorting out, the element has resistance in the form of a coil of wire that impedes the flow of current and converts the electric current into heat at the element.

This is same as filament inside light bulb.

If the element does not have resistance to impede current, then the two hot wires in the 240Volt circuit will short out and cause flash of overheating and burning that will burn out element. If element does not burn out immediately, and short continues, then the wire connected to circuit breaker begins to heat. When heat on wire exceeds circuit breaker rating, then the breaker trips off.

Circuit breakers are triggered by heat.

This is why wire size and breaker size must match., to avoid overheated wire inside wall that will catch house on fire.