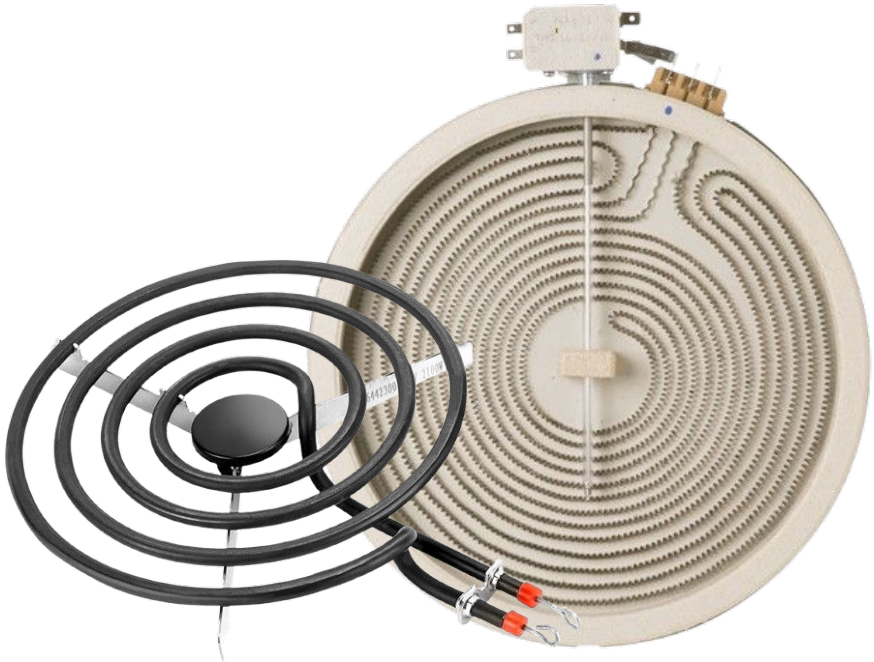
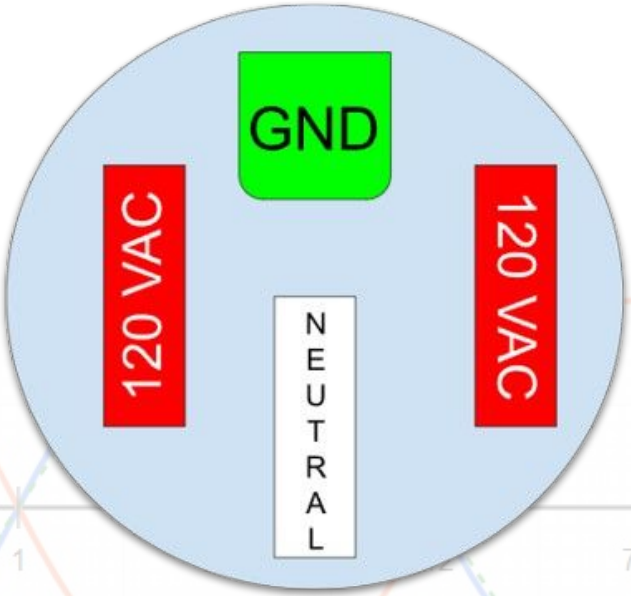
Cooktop Electricity

- 240 VAC
- Electrical Theory
- Resistance
- Theory of Operations
- Diagnostics



240 VAC

- "VAC" means Volts of Alternating Current.
- 240 VAC is the amount of electrical pressure.
- Comes from (2) 120 VAC lines of voltage.
  - Out of phase with one another.
- This creates a voltage potential of 240 VAC.
- Larger voltage potential = more electrical pressure = more current.



For a deep-dive on 240 VAC and voltage potential, sign up for the program.

Electrical Short

An electrical short happens when electricity takes a shortcut with little or no resistance.

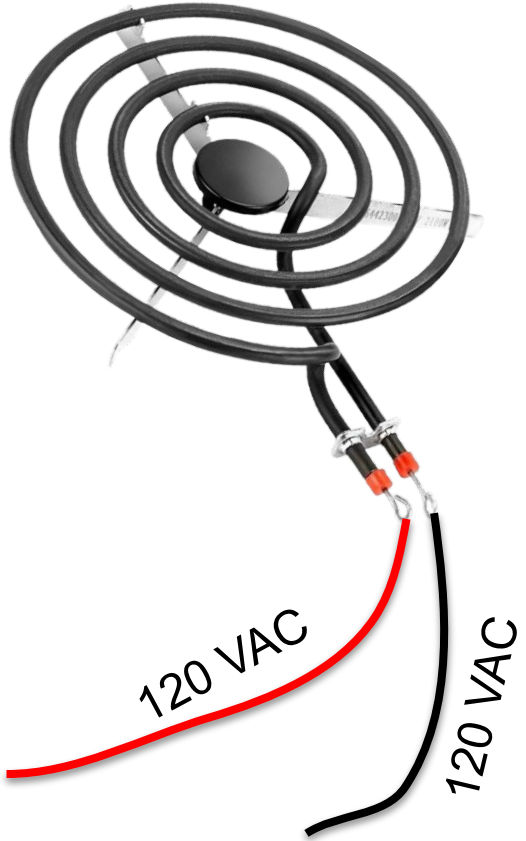
When there's no resistance in the path, electrons have nothing to slow them down.

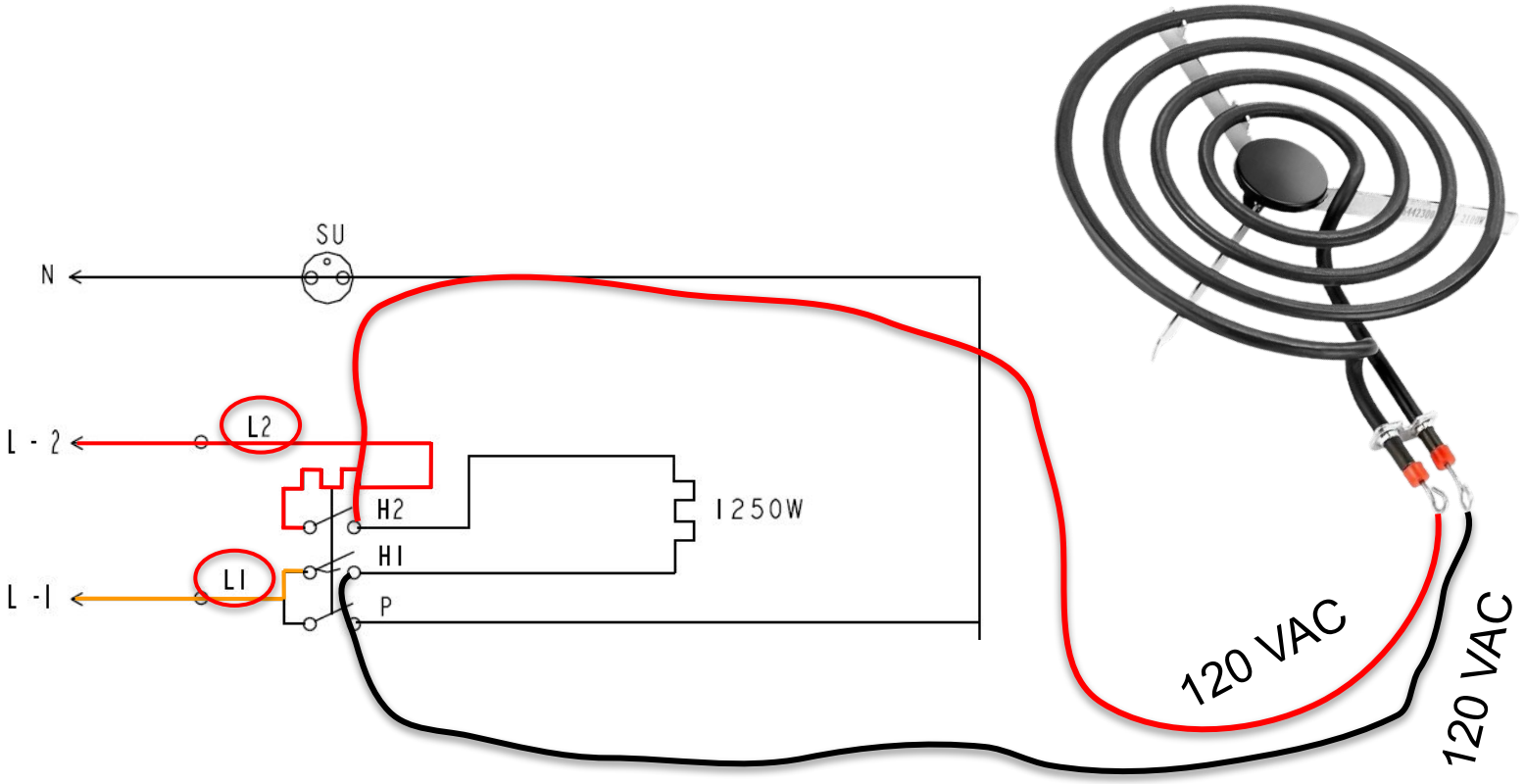
In an AC circuit, this means current can rapidly surge toward infinity—until a breaker trips or something burns.

It's like water blasting through a broken dam—fast, uncontrolled, and dangerous.

Resistance

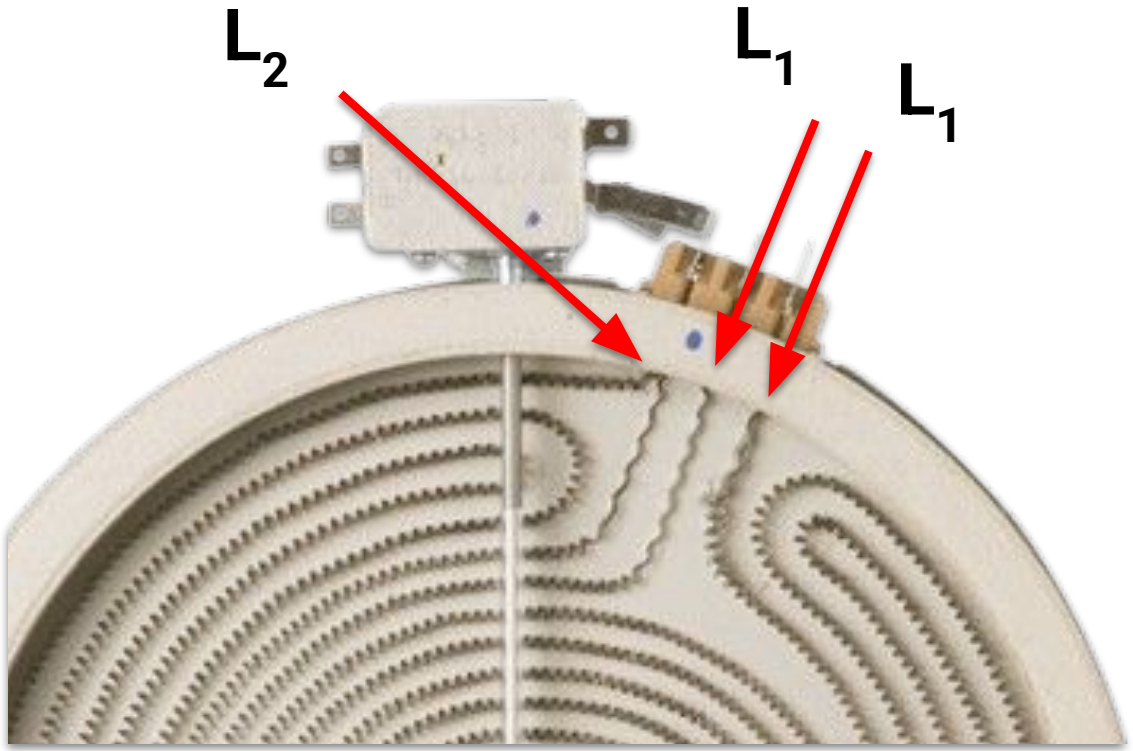
- Resistance in a circuit is what restricts the flow of electrons.
- Heating elements are **resistive loads**.
- When you place L_1 on one side of a resistive load, and neutral (or L_2) on the other side, there is resistance between the two.
    - This resistance restrict the electrons, and generates heat.

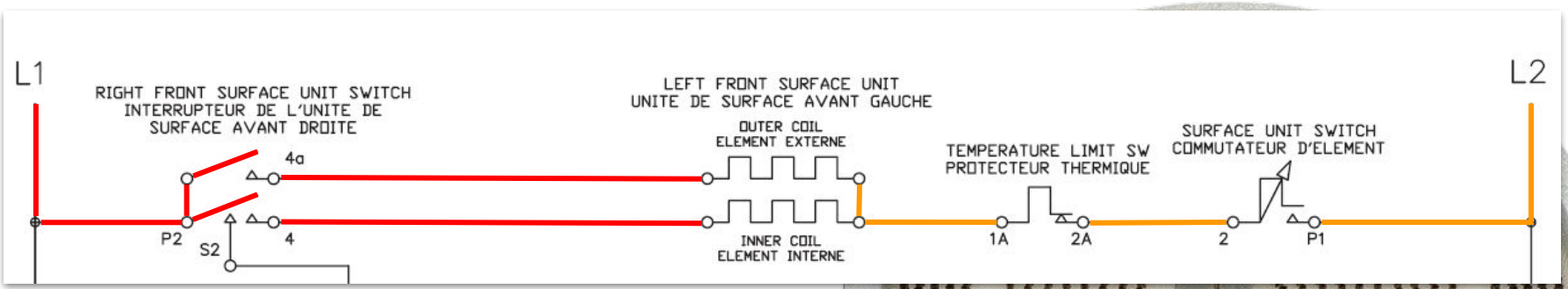



SU
N
L - 2
L2
H2
1250W
HI
L -1
LI
P
120 VAC
120 VAC

Dual Burner

- Same concepts apply when you're dealing with a dual burner.
- There are 2 sets of burners, each needing 240 VAC.
- Generally 3 connections for heat.
  - 2 for 1 leg of voltage.
  - 1 for the other leg of voltage.

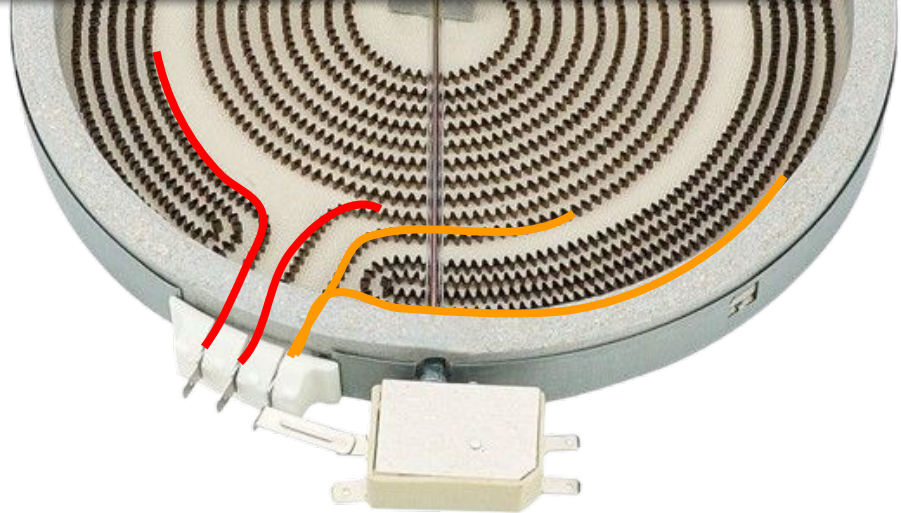

L2
L1
L1

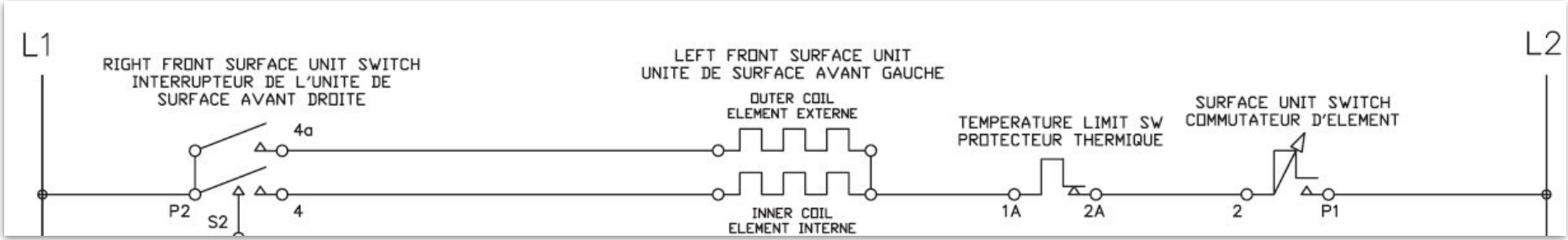


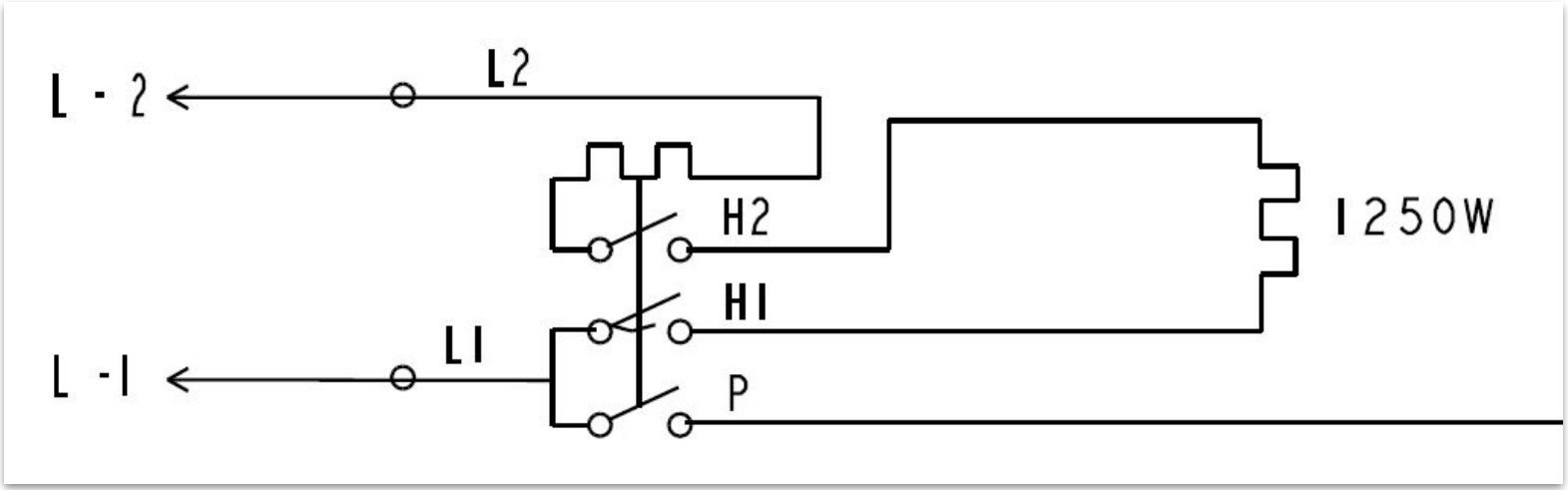
L_1 is supplied to one side of both elements. L_2 is supplied to the other side of both elements.

To energize both, the switch closes both L_1 contacts.

To energize just one, the switch closes only one contact.

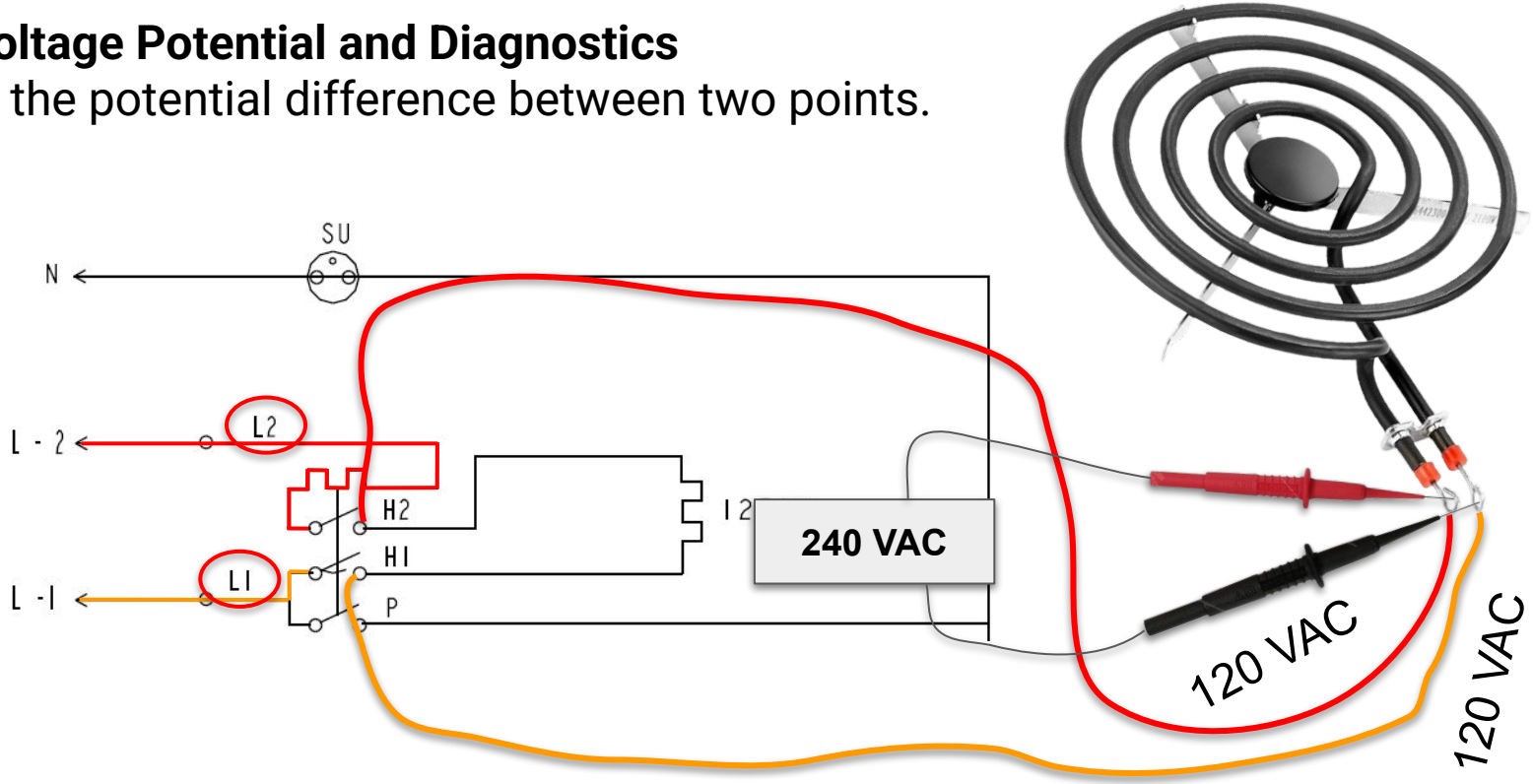



L1
RIGHT FRONT SURFACE UNIT SWITCH
INTERRUPTEUR DE L'UNITE DE
SURFACE AVANT DROITE
4a
P2
S2
4
LEFT FRONT SURFACE UNIT
UNITE DE SURFACE AVANT GAUCHE
OUTER COIL
ELEMENT EXTERNE
INNER COIL
ELEMENT INTERNE
TEMPERATURE LIMIT SW
PROTECTEUR THERMIQUE
1A
2A
SURFACE UNIT SWITCH
COMMUTATEUR D'ELEMENT
2
P1
L2


L - 2
L2
H2
1250W
H1
L1
L - 1
P

Voltage Potential and Diagnostics

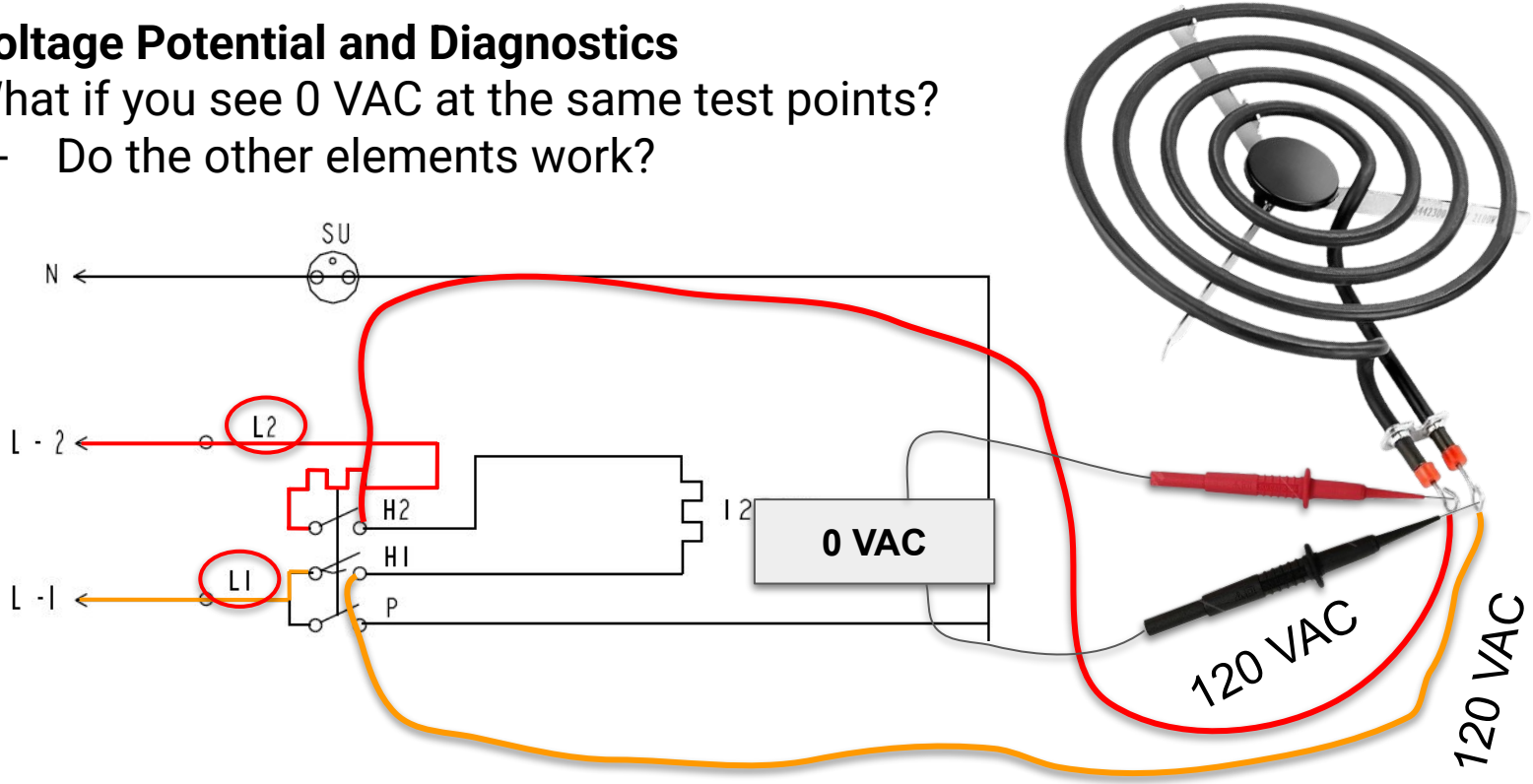
Is the potential difference between two points.



Voltage Potential and Diagnostics

What if you see 0 VAC at the same test points?

- Do the other elements work?



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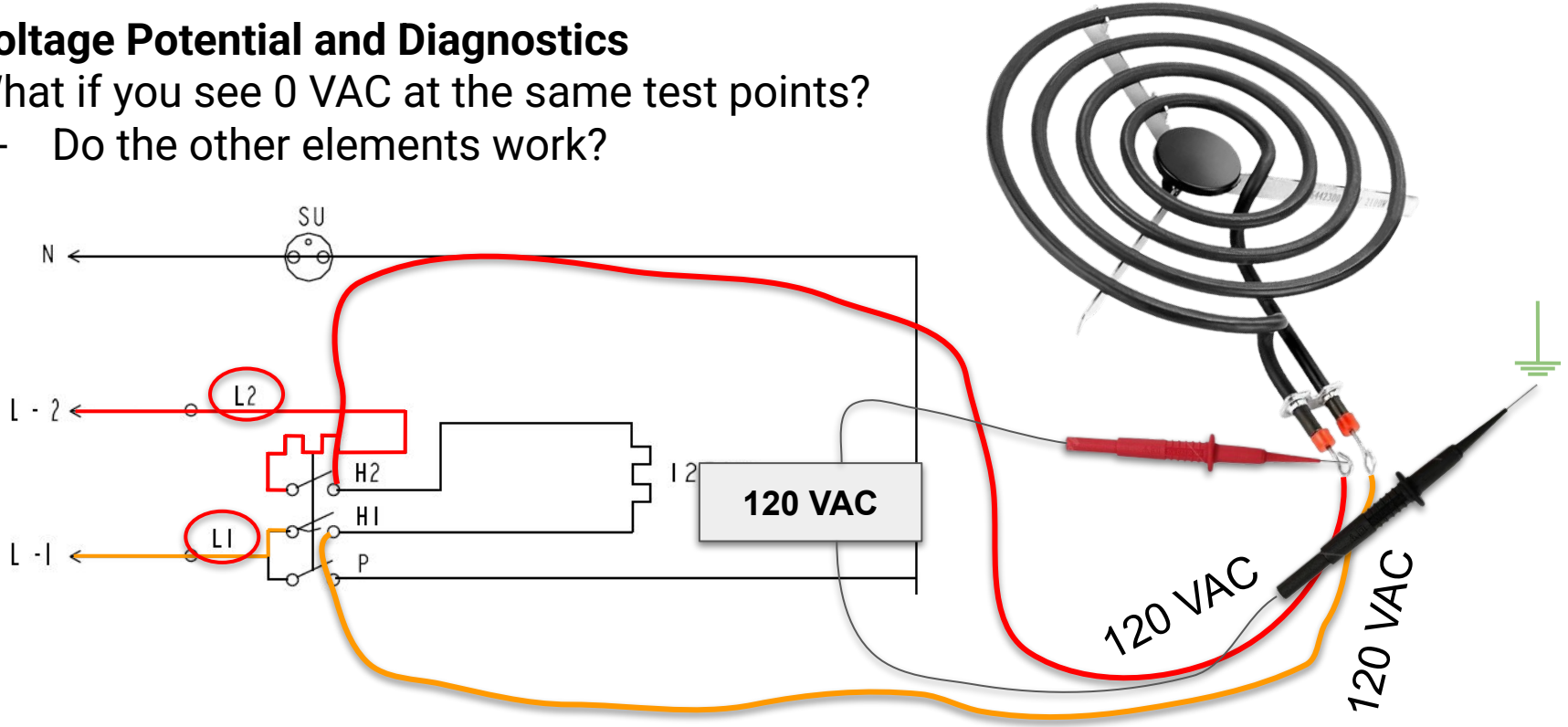
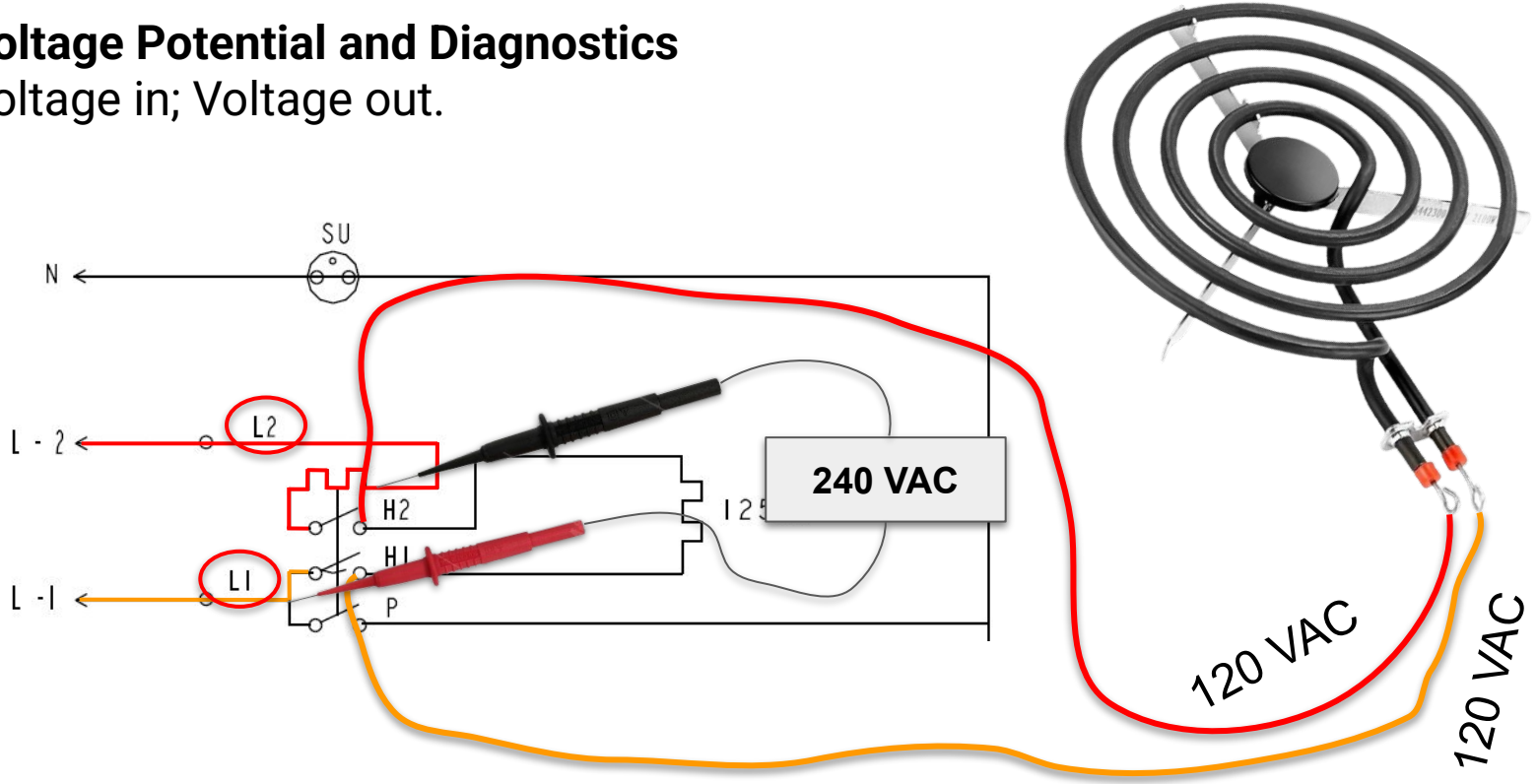


Voltage Potential and Diagnostics

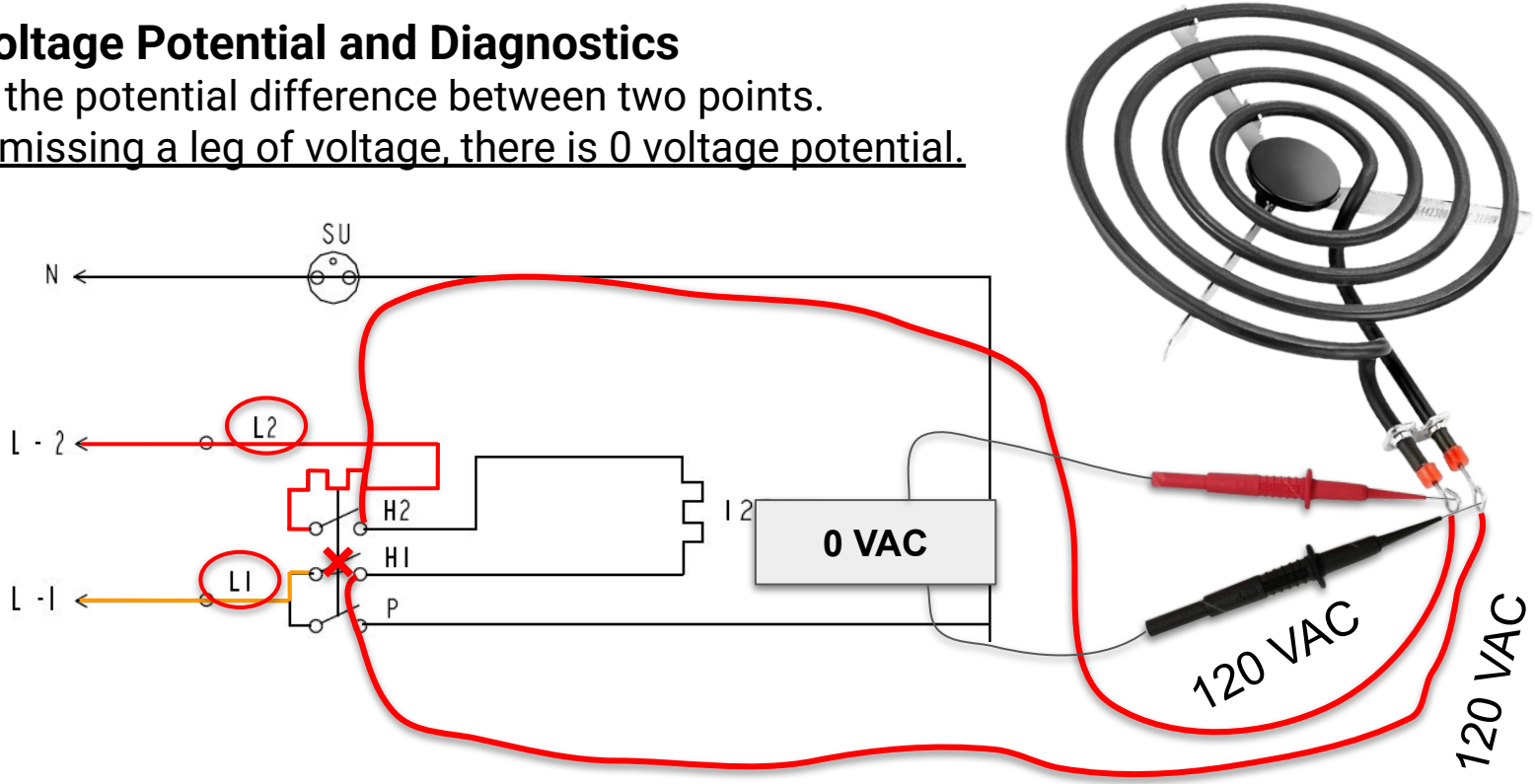
Voltage in; Voltage out.



Voltage Potential and Diagnostics

Is the potential difference between two points.

<u>If missing a leg of voltage, there is 0 voltage potential.</u>



Summary

- There needs to be resistance between line and neutral, or L_1 and L_2, to prevent an electrical short.
- Electric heating elements are **resistive loads**. They resist the flow of current, and generate heat.
- Regardless of if you're dealing with a single burner or a dual burner, the electrical concepts are exactly the same.
- You can use the concept of **voltage potential** to test with live voltage to see where the issue is.
    - This concept applies to any load. You can use it to determine if you're missing a leg of voltage, or if you're missing neutral.