

Podcast Notes for Episode 5: The Grounded Conductor



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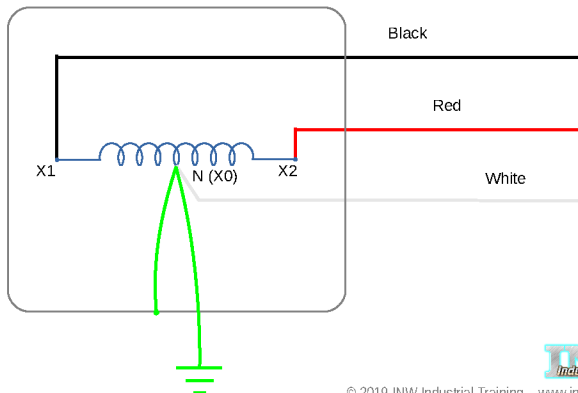
Art 200 – Grounded Conductor

- Grounded Conductor
 - A system or circuit conductor that is intentionally grounded
- Neutral Conductor
 - The conductor connected to the neutral point of a system that is intended to carry current under normal conditions.



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Single Phase 120/240V



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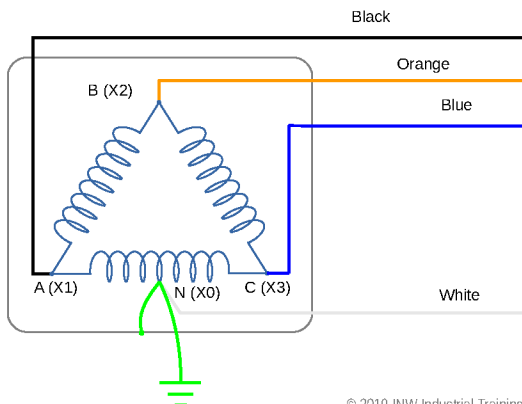
Single Phase 120/240V

- Line to Line 240V
- Line to Neutral 120V



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3 Phase 120/240V Delta



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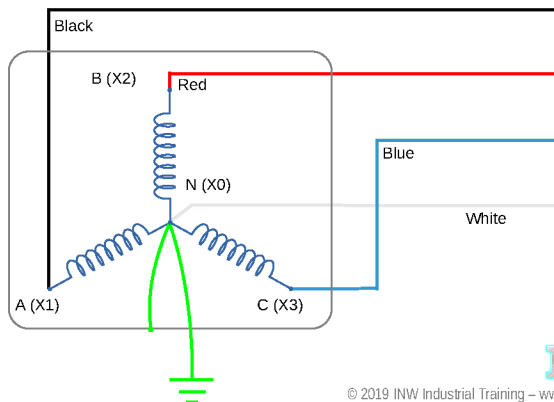
3 Phase 120/240V Delta

- Line to Line 240V (3 phase)
- Line to Neutral
 - A to N = 120V
 - B to N = 208V (High Leg)
 - B phase cannot be used to supply any 120V loads
 - C to N = 120V



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3 Phase 120/208V Y



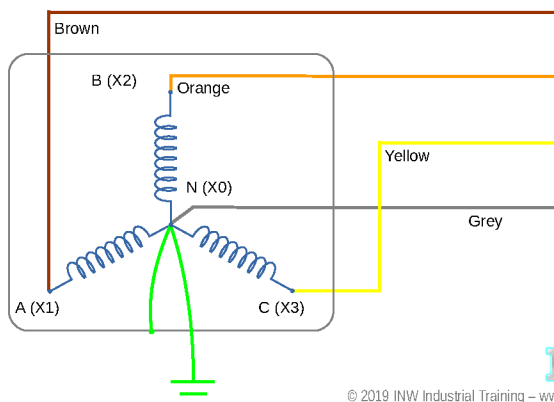
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3 Phase 120/208V Y

- Line to Line 208V
- Line to N 120V
- There is no “High Leg” in a Y connected system

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3 Phase 277/480V Y



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3 Phase 277/480V Y

- Line to Line 480V (Three Phase)
- Line to Neutral 277V
- There is no High Leg in this system either, although the color orange is used.

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Fact to Ponder:

- All Neutrals are Grounded conductors
- Not all Grounded Conductors are Neutrals

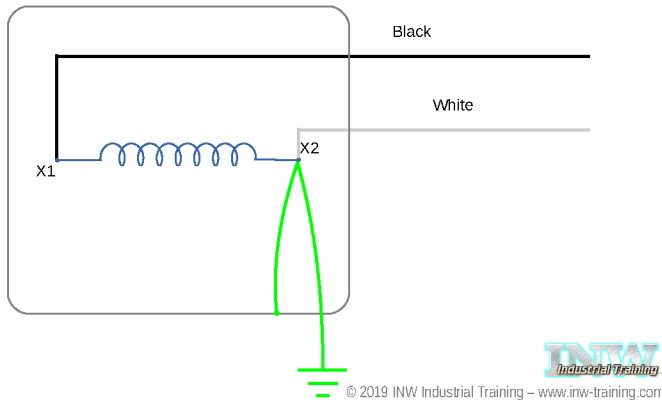
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Not all Grounded Conductors are Neutrals

- NEC 250.24(C) Requires a Grounded conductor to be brought to the Service
- NEC 250.26(1) and (4) reference systems where there is no Neutral, but one of the phase conductors is grounded.

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Single Phase 120V only



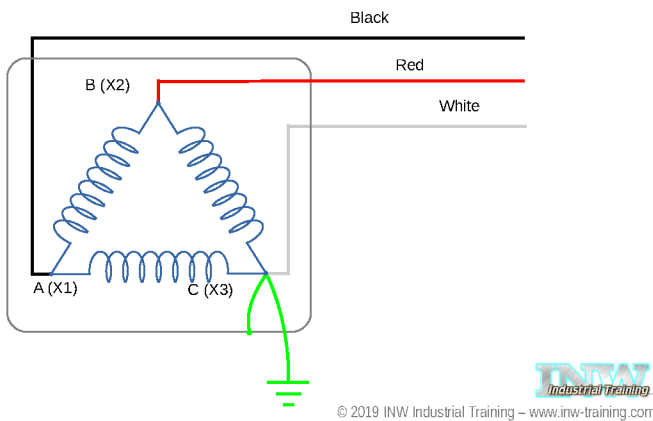
Single Phase 120V only

- Voltage between the two conductors is 120V
- Example is a control transformer with a straight 120V output
- The transformer does not care which side is grounded... the other becomes the ungrounded (hot) side.



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3 Phase Corner Grounded Delta



3 Phase Corner Grounded Delta

- Line to Line Voltage is 240V Three Phase, however there is no voltage difference between C Phase and Ground.
- If fuses are used to protect the system, none may be placed in C phase. If a breaker is used, either a two-pole or 3 pole breaker will work.
- A typical use would be for equipment that is strictly 3 Phase, no Neutral or other circuits required. Eg. a well pump in a field without any adjoining structure.



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