



Advances in Load Center Technologies and End-of-Life GFCI Breaker Limitations



Advances in Load Center Technologies and End-of-Life GFCI Breaker Limitations

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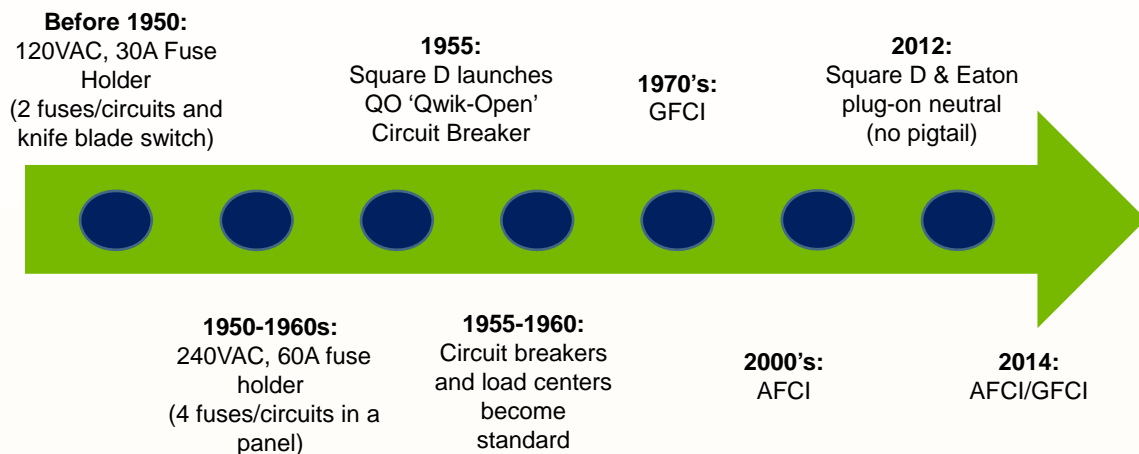
Workshop Agenda

- Advancements in Load Centers
- Addressing GFCI failures: *Diagnostics and Troubleshooting*
- Installation, simplified
- The Modern Load Center

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A History of Load Centers



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GFCI-type Branch Circuit Breakers

- Introduced in the 1970s, GFCI circuit breakers protect homeowners by interrupting power to a branch circuit when a ground fault is detected
 - Various UL revisions previously exempted manufacturers from responding to certain failures
 - Newest revision requires response no matter what the cause for failure
 - Loss of GFCI protection is known as end of life, a permanent condition that requires replacement of the GFCI



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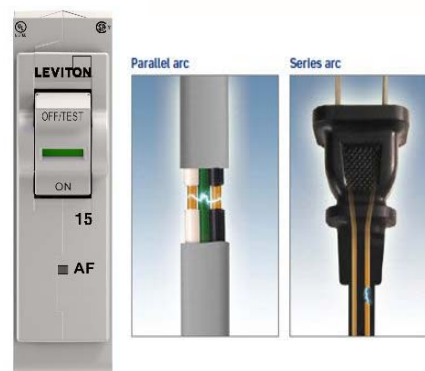
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AFCI-type Branch Circuit Breakers

- **Introduced in the 2000s**, AFCI circuit breakers protect homeowners by interrupting power to a branch circuit when an arc fault is detected
 - Helps to prevent electrical fires
 - Recent improvements in tripping technology have helped to reduce false tripping
 - Arcing faults are responsible for starting more than 28,000 home fires each year in the U.S.¹

¹ ESFI, Electrical Safety Foundation International Website



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Troubleshooting: Methods of the Past

- **How do you troubleshoot a tripped breaker?**
 - Feel around for a tripped handle
 - Turn off, hold down the test button and get your watch out:
 - Does it trip instantly?
 - After two seconds? After five?
 - Shouldn't there be a better way to troubleshoot?

| Trip time | Response |
|---------------------------------|---|
| Trips instantly: (less than 1s) | Fault to Ground |
| Trips at two seconds | Arc Fault: Parallel or Series |
| Trips at five seconds | Procedure Complete: no fault, thermal overload or short circuit |

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The Future of Diagnostics

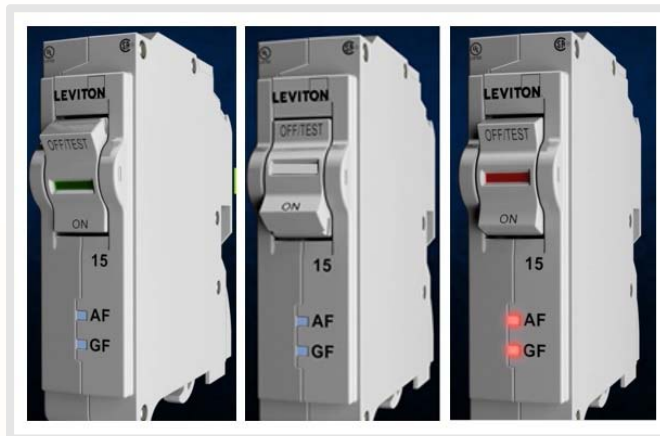
- **The newest technologies in troubleshooting tripped breakers include...**
 - Backlit, line-side powered LEDs
 - No resetting the breaker and reintroducing a potentially hazardous situation to the homeowner
 - Color indicators in the handle
 - Quick operational status at-a-glance
 - Clear plexiglass observation window
 - Ask the homeowner to look through the window before you leave for a callback
 - They feel safe and you're prepared



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The Future of Diagnostics



ON

OFF

TRIPPED

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Installation: Methods of the Past

- **When do you install your circuit breakers?**
 - During trim-out?
 - What if you could install during rough-in?
- **How do you install a circuit breaker?**
 - Wiring directly to the breaker
 - Pigtails
 - Plug-on neutrals



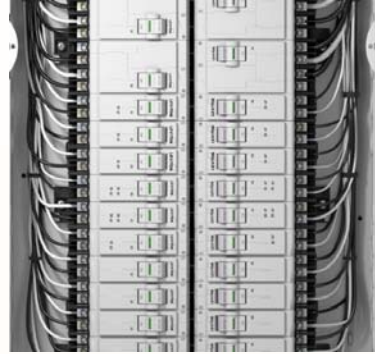
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The Future of Installation

- **The newest technologies in installing circuit breakers include...**
 - All plug-on design
 - Zero direct termination to the breaker
 - No more pigtails
 - Pull, dress and terminate all circuits at rough-in
 - Hot test your branch circuits before the sheet rock goes up
 - Easier to pass inspections
 - Increased space for hand movement
 - Install load centers in less time

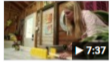



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Aesthetics? What Aesthetics?

- **Where do you install panels?**
 - Do you know that homeowners cover them?
 - How have you helped a homeowner conceal their panel?

DIY Fabric Panels to Cover Breaker Box - YouTube
<https://www.youtube.com/watch?v=dzZ1hjOW6u8>
Jan 4, 2015 - Uploaded by Today's Homeowner with Danny Lipford
DIY Fabric Panels to Cover Breaker Box ... 1 panel was hung using small hinges to keep easy access to ... 

DIY - HOW TO HIDE YOUR ELECTRIC PANEL - YouTube
https://www.youtube.com/watch?v=aqWVf0_qZIE
Feb 16, 2016 - Uploaded by Engineering my Life
Hiding your electrical panel is easy. This DIY will show you how to hide your panel with a decorative picture. 

 **Need to cover an electrical panel in my living room**
spritidj | November 30, 2013

been racking my brain and scouring the internet for ideas on how to cover this panel in my living room. Please help!



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Concealing an Electrical Panel

By TIM McKEOUGH AUG. 7, 2013

Q. How can I make the electrical panel in my apartment less of an eyesore?

A. An awkwardly placed electrical panel is a common problem in many apartments, especially in newer buildings, said Emma Kerins, an executive vice president at Halstead Property. "In prewar apartments, they're usually in the kitchen, so they're not as in your face," she said.

[DIY Fabric Panels to Cover Breaker Box - YouTube](https://www.youtube.com/watch?v=dzZ1hjOW6u8)



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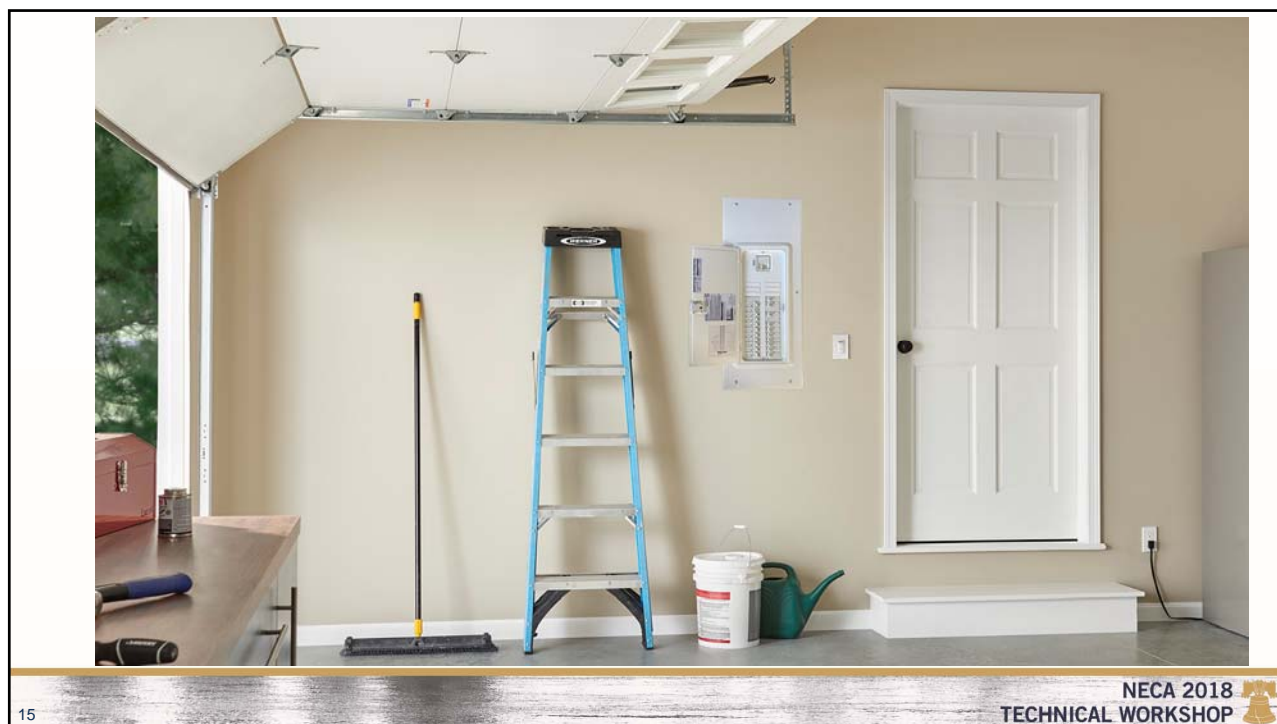
The Future of Aesthetics

- **Surprise your customers with a modern, sleek appearance**
 - No need to cover or hide the panel
 - Fresh white enclosure complements nearly any finished space
- Choose a model with or without optional observation window
- Blends in with a sophisticated, high-tech look to satisfy the most discerning customer



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