

# Circuit Breakers vs Overloads

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[0m:0s]



[0m:4s] Hi, I'm Josh Bloom. Welcome to another video in the RSP Supply Education series. If you find that these videos are helpful to you, it certainly helps us out if you could give us a big thumbs up and subscribe to our channel.

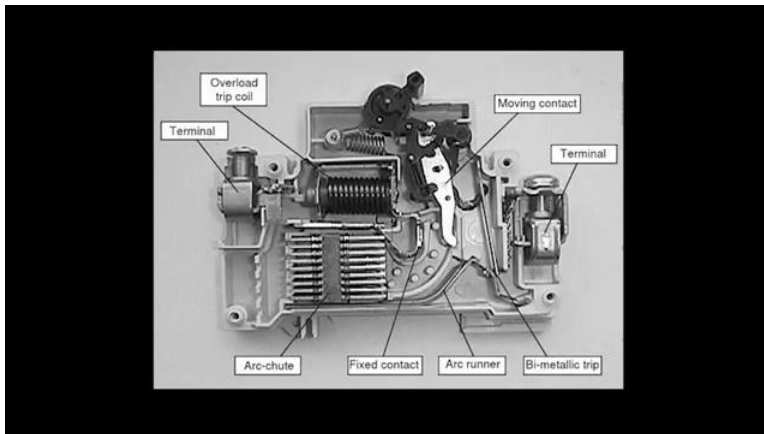
[0m:15s] In today's video, we are going to be talking about some devices that are commonly used in electrical circuits that are designed to provide protection when too much power or current is being provided that could potentially harm components on that circuit. I am talking about both circuit breakers and overload relays. In this video, we want to talk about some of the differences between these two devices so that we might better understand in what situations they are most commonly used and why.

[0m:48s] We will also look at some of the basic functionalities of each of these devices, again, providing us a better understanding of each device and how they differ from one another. As always, the information provided in this video is intended to provide only a basic overview of this topic, and it is not intended to take the place of proper electrical instruction. If you have questions about how either of these two devices might work with your specific situation, please make sure to seek the help of a qualified person. With that being said, let's take a closer look at both circuit breakers and overload relays and how they differ from one another. As a reminder, circuit breakers are used as a form of overcurrent protection for anything located downstream of that device.



[1m:34s] It is not uncommon to see a single circuit breaker being used to provide protection for multiple devices. It will only trip if a surge in power occurs or current exceeds the ratings for that particular device.

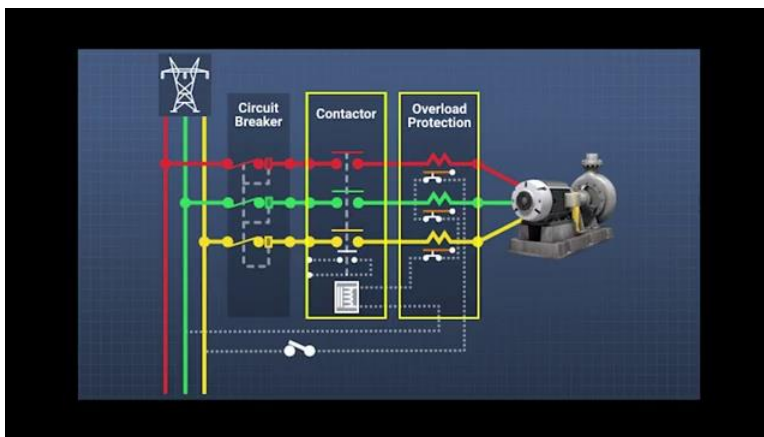
[1m:48s] It is not specifically designed to protect one type of equipment, but instead an entire circuit.



[1m:55s] On the other hand, an overload relay is used for a more specific scenario. Overload relays are used to prevent a motor from overheating. While they can function in a similar way to circuit breakers,



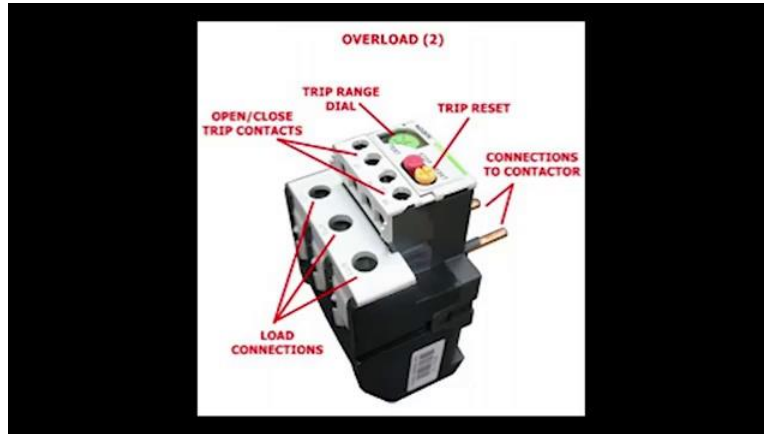
[2m:9s] their intended use is much different. Overload relays are almost always used in conjunction with a contactor.



[2m:17s] The contactor acts as the switch that can turn on and off the motor.

[2m:23s] The overload relay is normally wired downstream of the contactor.

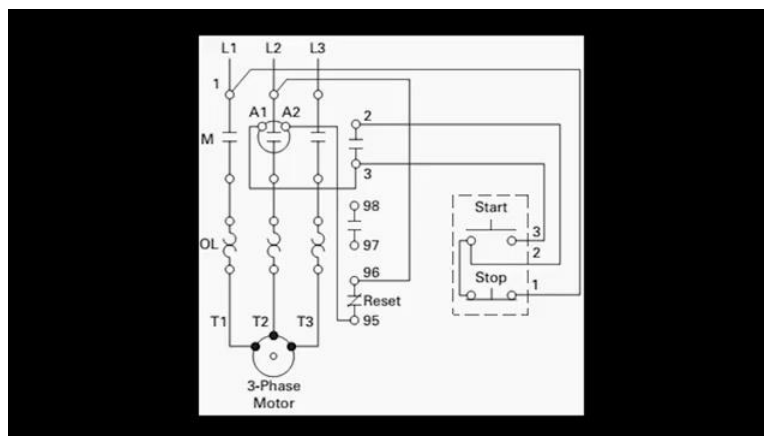
[2m:28s] It is normally sized for the motor that it is wired to. Using the information specifications of the motor and when sized properly, the overload relay can provide the protection needed for the motor while still allowing it to run normally. It will trip when a prolonged overcurrent event has occurred.



[2m:49s] When wired correctly, the overload relay will cause the contactor to open, thus cutting power to the motor, preventing the motor from overheating and becoming damaged. One very important note: the overload relay itself will not disconnect power from the motor.

[3m:6s] It simply enables a relay to fire.

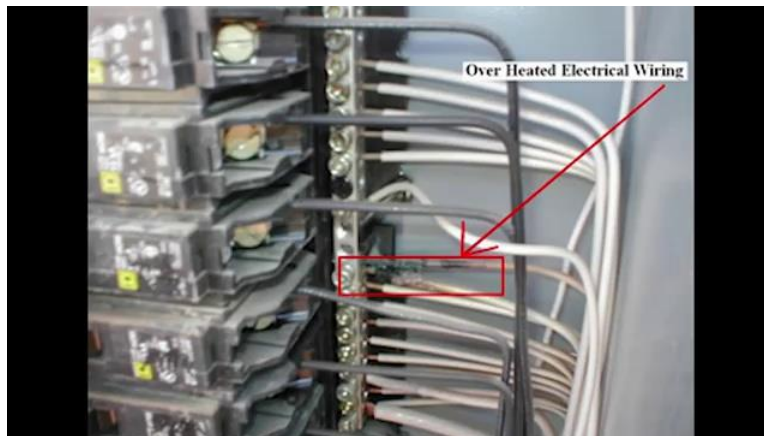
[3m:9s] So, it is essential that they are wired correctly so that the motor's power is cut off when the overload relay detects an over current event. A circuit breaker will trip when more current or power is passing through the breaker than it is rated for.



[3m:25s] However, it is possible for an overload relay to trip and not for a circuit breaker to trip,



[3m:31s] even if they are on the same circuit, depending on the ratings of the overload and the breaker. Circuit breakers are normally sized by using the current rating of the wire that is being used for a particular circuit. This is intended to keep the wire from overheating due to too much current passing through it. Again, the overload is sized based on the full load amp rating and other specifications that the motors are connected to, and specifically designed to keep the motor from overheating. While they operate in similar ways and also provide similar types of protection for the devices that they are wired to, they are designed for different purposes and should never be interchanged.



[4m:16s] With some basic understanding and a little bit of knowledge, you should be able to use both of these devices in your electrical system safely while also getting the results that you expect. For a full line of circuit breakers and overload relays, as well as thousands of other products, please go to our website. For more information or other educational videos, go to RSPSupply.com, the Internet's top source for industrial hardware. Also, don't forget, like and subscribe.



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