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- [breakers \(1\)](#)
- [power distribution system \(1\)](#)

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What are the differences in how a breaker can be tripped?

Posted by [Scott Storr](#) on Wed, Sep 14, 2011 @ 10:21 AM

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By: Tony Kambic
Lex Technical Services Supervisor

As you all know, Lex designs and builds power distribution boxes that include branch circuit protection through the use of breakers. There are thousands of breaker types available on the market today which are sorted by variables like voltage and amperage. One variable that gets overlooked frequently is the type of trip mechanism a breaker has.

There are (2) common types of trip mechanisms in breakers: Hydraulic, Thermal and Electronic. Each interrupts the current differently, and each has qualities that make them adaptable in different situations.

Hydraulic-Magnetic breakers open the circuit by using the pulling force from a magnet and solenoid. When there is sufficient current, the magnetic field fires the solenoid, opening the circuit. Hydraulic-magnetic breakers are great in locations where temperature is a factor because they are not affected by heat or cold.

Thermal-Magnetic breakers use (2) different systems to open a circuit: a solenoid like the one described above, and a mechanism that monitors temperature. When either mechanism is beyond the limits the breaker is designed for, the circuit is opened. Thermal-Magnetic are the most common breakers, and Lex uses these for most circuits lower than 100 Amps.

Electronic breakers use a micro-controller to sense current, and engage a device to open the circuit when the current is too high. Electronic breakers can be adjusted for many different variables, including trip delay and in-rush current, which gives them the advantage over other types. Lex currently uses electronic breakers for most products over 100 Amps.

In review:

Hydraulic-Magnetic: Trip settings not affected by temperature

Thermal-Magnetic: Common and reliable

Electronic: Used for higher amperages, adjustable settings. Trip settings not affected by temperature

Every time Lex is approached about designing a custom box or distribution system, we frequently ask about the environment where the product will be used. Understanding the application is important to be certain we are using the right components for the equipment you need in your work environment. Make sure to mention where you are using your power distribution system when designing your next product with us.

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