



QUARTERLY  
NEWSLETTER  
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With engineers and operators on both sides of the globe, TLX has the talent, tools, and technology needed to make the best custom solenoids on the market.



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# Latching Solenoids

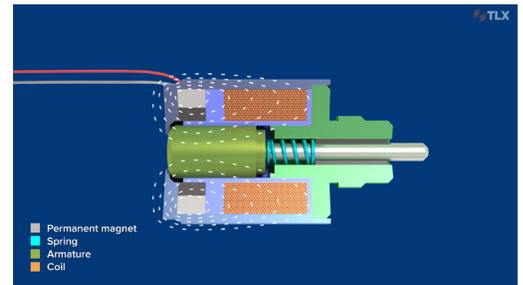
## WHAT THEY CAN DO FOR YOU



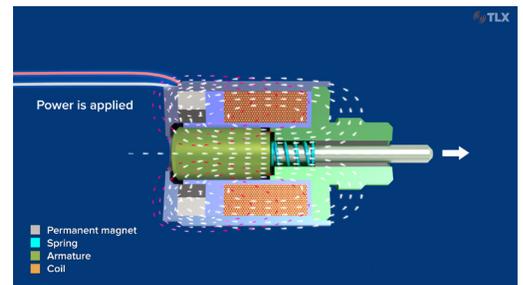
**LATCHING SOLENOIDS ARE** solenoids that can hold any position without the constant application of power. Power is only applied to move the solenoid's position, not maintain it. To maintain the position, the solenoid uses either a permanent magnet or residual magnetism to hold its position.

A permanent magnet generates a magnetic flux when power is applied, and this flux holds the solenoid in the latched position. Alternatively, a residual magnetism latching solenoid is held in place by the actuator's inherent residual magnetism, in which the magnetic force is enhanced by design. Both kinds of actuators are unlatched by applying a reverse polarity pulse of power that cancels out the magnetic flux.

Latching technology is well suited for battery-operated applications, as well as applications requiring the solenoid to hold a position for an extended amount of time. These kinds of solenoids can be custom designed for your specific application.



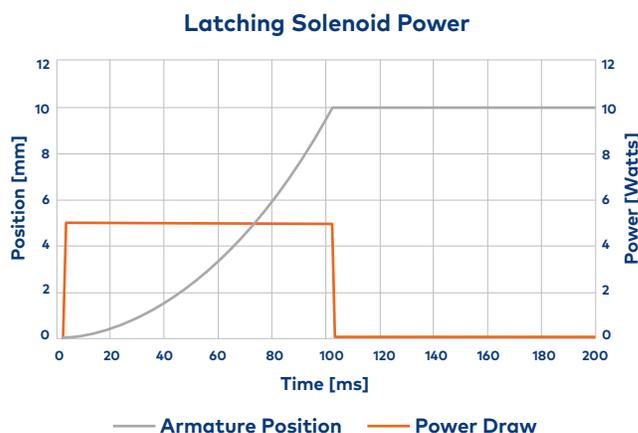
A permanent magnet holds the solenoid in the latched position.



The armature is extended when power in the same polarity is applied.



To learn more about latching solenoid operation, watch [this video](#) to fully understand how latching solenoids conserve energy because they consume no power to maintain set positions.



*Latching solenoids are well suited for battery powered applications since they require a short pulse to change state and no power to remain in position.*

— WAYNE GROTH, SALES MANAGER

Latching solenoids consume no power, produce no heat, and generate no electrical noise to hold state.

## Benefits of Latching Solenoids

- + Won't overheat
- + Minimal power draw to latch
- + No power draw to remain in latched state
- + Smaller package size while capable of handling higher latching forces and producing greater force
- + Can be used in battery operated applications



## Case Study

# HOW LATCHING SOLENOIDS CAN MAKE HYBRIDS SAFER

**HYBRID CARS POSE A UNIQUE THREAT** if they are ever in a serious accident. Because electricity is flowing throughout the system, the car could potentially catch on fire, or emergency personnel could get shocked by the high voltage battery. A manufacturer asked us to design a solution that would disconnect the battery in the case of an accident. However, this component needed to be free of the possibility of accidentally locking back into the "on" position should the car start rolling.

We designed a custom latching solenoid that uses residual magnetism instead of a permanent magnet. With this design, in the case of an emergency, the solenoid automatically unlatches upon impact. The solenoid cannot re-latch without power being applied. This solenoid doesn't need a permanent magnet to latch but instead only needs a pulse of power in either polarity.

This residual magnetism latching design is suitable for use in vehicle locks, latches, disconnects, and safety cutout applications.





## Adding a Failsafe to Mitigate Risk

**LATCHING SOLENOIDS** don't come with a natural failsafe, meaning if there were ever a loss of power, the solenoid would be unable to change from its last position. The only way to prevent this is to include a failsafe system in its design. This failsafe is a simple control system that uses a circuit board and capacitor to monitor power availability and move the solenoid's armature into the base (or safe) position if power is lost. It can be customized to reset to the specific position you want it to when power is lost.

One application example is a latching solenoid lock used in systems that hold a gate, door or turnstile in a locked position. In the event of a fire or other catastrophe, this system would lose power, keeping the gates/doors locked. But with the integration of a failsafe, the system would allow the gates/doors to be opened so people can exit the area safely.

## WHEN SHOULD YOU CHOOSE A LATCHING SOLENOID OVER A REGULAR ONE?

- 1** When you need the solenoid to remain in one state (on or off) longer than the other state
- 2** When you need a greater force from a smaller package size
- 3** When you want to reduce heat generation
- 4** When you need an energy-efficient solution for a battery-powered application



## Curious about Possible Applications for Latching Solenoids?

- + Portable devices
- + Locking applications
- + Machine tools
- + Vending equipment
- + Brake systems
- + Air bag vents
- + Disconnects
- + Fire protection applications
- + ATMs
- + Supply valves
- + Possible applications are truly endless!

**Wondering if a latching solenoid could be useful in your next project? Ask our engineers.**

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