

Solenoid relay electric device

It is device that acts like a switch for electric current thus power. Inside a relay is the solenoid. Relay devices are mostly used for high voltage circuits but have some use in the low voltage circuits. Because of these high voltages, relays are built to be bulky and heavy so that they wouldn't be overloaded by high currents. When electric current passes through the solenoid coil they either close or open their spool system. They are mostly used for powering up big electro motors and industry machines. Normal switches would overload so we use relays instead.

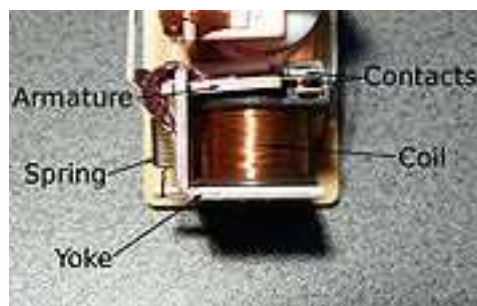


SOLENOID

Solenoid is a three-dimensional coil. In physics, the term **solenoid** refers to a loop of wire, often wrapped around a metallic core, which produces a magnetic field when an electric current is passing through. Solenoids are important because they can create controlled magnetic fields and can be used as electromagnets. These electromagnetic fields are the mechanism for closing and opening the spool system. Closed spool activates the device and open spool deactivates the device. When we press the „activate“ button on the control pad we manually tamper with the spool system.

RELAY

There are three types of relays. Automatic, semi-automatic and manual. Automatic relay activates or deactivates itself by the increase or decrease of current/voltage. Semi-automatic relays are like automatic but operators can manually control the relay. Manual relay is completely controlled by an operator. All types use primarily solenoid coils but can use el.mag. cores for control of spool system. Relay has two connected but independent electric circuits. One is the main power line through which we want high voltage/current to pass. Second one is the control circuit which we use to control the relay's spool system. Through the control circuit passes a low current because we don't need a lot of power to close or open the spool system. The spool is like a larger version of a contact that is able to withstand high currents/voltages.



HOW IT WORKS

We press the activate button on the control board to enable the control circuit of the relay. Doing so we create a current which will magnetize the solenoid coil. Magnetized coil has magnetic properties and pulls the spool contact towards itself. When the spool system touches the contact the whole system is activated and the power from the main line can pass through the relay thus activating the electromotor or industry machine. To deactivate the relay we press the deactivate button on the control board. Doing so we decreased the current in the control circuit, demagnetized the solenoid coil and released the spool system's contact. The spool system returns to its starting position because of the spring which acts in the opposite direction of the solenoids magnetic field. The spring is weaker than the magnetic field so it can return the spool only when the coil is demagnetized.