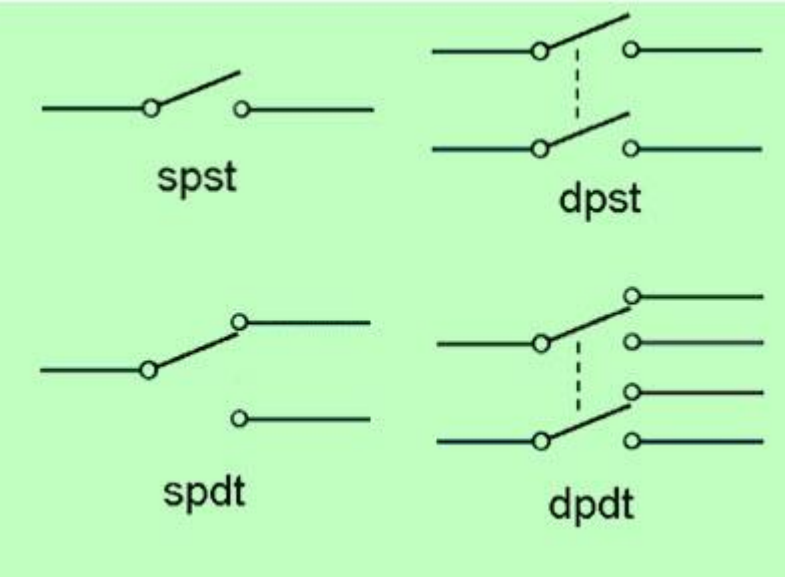
DIFFERENT TYPES AND VARIETY OF SWITCHES

DIFFERENT TYPES

1. SPST (Single Pole Single through)
2. SPDT (single pole double throw)
3. DPST (double pole, single throw)
4. DPDT (double pole double throw)



SPST (Single Pole Single Throw)

The SPST is a basic ON/OFF switch that is used to connect or break the connection between two terminals. The application of SPST switch is light switch given below and it is also called as a toggle switch. This type of switch has one input and one output.

SPDT (Single Pole Double Throw)

The SPDT switch is a three terminal switch, one terminal is used as input and remaining two terminals are used as outputs. The application of SPDT switch is

mainly involved in a three-way circuit to turn ON/OFF a light from two locations like from the top & bottom of a stairway.

DPST (Double Pole, Single Throw)

The DPST switch consists of two poles that means it includes two identical switches located on side by side. This switch is operated by one single toggle, which means that two discrete circuits are controlled at a time through one push. This switch is used to turn two circuits ON/OFF and it consists of four terminals namely two inputs and two outputs.

DPDT (Double Pole Double Throw)

This switch is equal to two SPDT switches, it means two separate circuits, connecting two inputs of each circuit to one of two outputs. When it is in ON-ON mode or ON-OFF-ON mode they work like two discrete SPDT switches worked by the similar actuator. At a time only two loads can be ON. The best application of this switch is H-Bridge motor drive.

VARIETY OF SWITCHES

Toggle Switches

Toggle switches are actuated by a lever angled in one of two or more positions. The common light switch used in household wiring is an example of a toggle switch.

Toggle switch

Pushbutton Switches

Pushbutton switches are two-position devices actuated with a button that is pressed and released. Most pushbutton switches have an internal spring mechanism returning the button to its “out,” or “un-pressed,” position, for momentary operation.

Pushbutton switch

Selector Switches

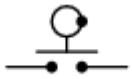
Selector switches are actuated with a rotary knob or lever of some sort to select one of two or more positions. Like the toggle switch, selector switches can either rest in any of their positions or contain spring-return mechanisms for momentary operation.

Selector switch

Joystick Switch

A joystick switch is actuated by a lever free to move in more than one axis of motion. One or more of several switch contact mechanisms are actuated depending on which way the lever is pushed, and sometimes by how far it is pushed.

Joystick switch



Limit Switches

Some switches are specifically designed to be operated by the motion of a machine rather than by the hand of a human operator. These motion-operated switches are commonly called limit switches, because they are often used to limit the motion of a machine by turning off the actuating power to a component if it moves too far.

Lever actuator limit switch

Proximity Switches

Proximity switches sense the approach of a metallic machine part either by a magnetic or high-frequency electromagnetic field. Simple proximity switches use a permanent magnet to actuate a sealed switch mechanism whenever the machine part gets close.

More complex proximity switches work like a metal detector, energizing a coil of wire with a high-frequency current, and electronically monitoring the magnitude of that current.

Another form of proximity switch is the optical switch, comprised of a light source and photocell. Machine position is detected by either the interruption or reflection of a light beam. Optical switches are also useful in safety applications, where beams of light can be used to detect personnel entry into a dangerous area.

Proximity switch

Speed Switch

These switches sense the rotary speed of a shaft either by a centrifugal weight mechanism mounted on the shaft, or by some kind of non-contact detection of shaft motion such as optical or magnetic.

Speed switch

Pressure Switch

Gas or liquid pressure can be used to actuate a switch mechanism if that pressure is applied to a piston, diaphragm, or bellows, which converts pressure to mechanical force.

Pressure switch

Temperature Switch

Temperature-sensing mechanism is the “bimetallic strip:” a thin strip of two metals, joined back-to-back, each metal having a different rate of thermal expansion. When the strip heats or cools, differing rates of thermal expansion between the two metals causes it to bend. The bending of the strip can then be used to actuate a switch contact mechanism.

Temperature switch

Liquid Level Switch

A floating object can be used to actuate a switch mechanism when the liquid level in a tank rises past a certain point. If the liquid is electrically conductive, the liquid itself can be used as a conductor to bridge between two metal probes inserted into the tank at the required depth.

Liquid level switch

Liquid Flow Switch

Inserted into a pipe, a flow switch will detect any gas or liquid flow rate in excess of a certain threshold, usually with a small paddle or vane which is pushed by the flow. Other flow switches are constructed as differential pressure switches, measuring the pressure drop across a restriction built into the pipe.

Liquid flow switch