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# *Pressman's Toolbox*

## Pitching switches

*By Frank Bourlon*

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Switches, used to control all kinds of devices, come in multiple flavors.

Pneumatic switches control air devices, such as the air cylinders found on newsprint roll-handling equipment.

Mechanical switches, meantime, are used for such functions as controlling the movement of newsprint rollers to the reels. Switches can also be manufactured to manage water and hydraulics.

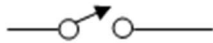
A switch can be an electronic device (referred to as a solid state device or a solid state relay circuit) to control a DC motor or an AC motor for shaftless control applications.

But the most common role for a switch is to control standard electrical current, such as pressroom lighting, dampener control and disconnect functions.

### **State of being**

Normally, a switch is either fully on or fully off.

Figure 1 depicts a single pole electrical switch. When the switch is off, electricity can't pass through the device. Conversely, when the switch is on (see Figure 2), electricity passes through, in the process causing a light to illuminate or a motor to be energized (see Figure 3).

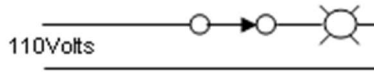


**Fig. 1. Single pole electrical switch.**

*Graphics: Frank Bourlon*

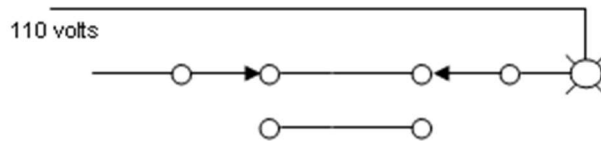


**Fig. 2. Switch in 'on' position.**



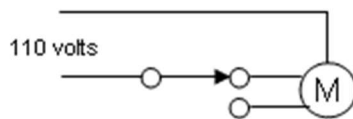
**Fig. 3. In this position, electricity passes through.**

Whenever a light needs to be controlled at two locations, two three-way switches can be used for this purpose (see Figure 4).



**Fig. 4. A three-way switch.**

The three-way switch is very much like the mechanical device used to shift a train from one track to another. A three-way switch can also be used to reverse the direction of a shade pole motor (see Figure 5).



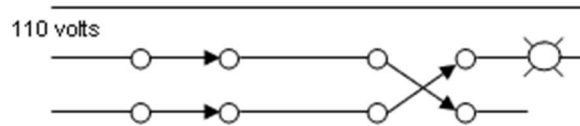
**Fig. 5. Switch can also be used to reverse the direction of a shade pole motor.**

## Multiple directions

Four-way switches are used whenever it's necessary to operate lights from three or more locations. Figure 6 demonstrates the use of two four-way switches. One of the switches is shown in one position while the other switch is shown in the other position.

As you can see, if either switch is switched to its opposite position, the light will turn off. You can add as many of these switches as you want in a

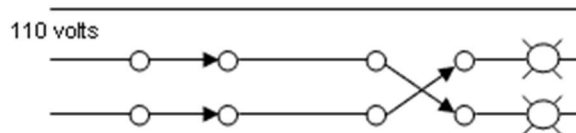
particular circuit.



**Fig. 6. A pair of four-way switches.**

### No connections

Notice that there are no connections to the bottom part of these switches. If another light is added to the bottom right switch, as shown in Figure 7, the lights would alternate as the switches changed positions. (In the case of Figure 7, the only light illuminated would be the one on the lower right.)



**Fig. 7. Lower right only position where light is illuminated.**

All of the switches cited can be purchased from home improvement stores and will handle at least 15 amps of current.

For motor controls and in situations where the power consumed is in excess of what these switches can handle, it might be better to consider relays.

If you have any questions concerning switches, please feel free to contact me at [nprc@flash.net](mailto:nprc@flash.net).

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