

## FAQs

# Foot Switch Selection Guidelines and Selection Options

### Why is the correct selection of a foot switch important?

Foot switches are designed to provide the user with comfortable, hands-free activation of one or more processes of a given device—making ergonomics important. Choosing the proper foot switch design will create a positive first impression of the overall device and installation. More importantly, the foot switch must offer attributes that represent the quality and design of the equipment as well as being the main machine/operator interface.

### What is the difference between medium and heavy-duty foot switches?

Medium-duty foot switches are intended for lighter manufacturing machines and medical equipment. When mobility is a concern, the plastic fabrication of these switches will reduce weight for easy transport. Options include covers, foldable carrying handles, and metal bases to add stability.

Heavy-duty foot switches, designed for rugged applications such as metal and wood working equipment, are typically made of a heavy metal and often have a hood, both to prevent accidental operation and protect against damage. The hood is usually oversized to allow activation by operators wearing large protective boots. Heavy-duty foot switches are typically used in a fixed position where weight and mobility are not concerns.

### What do I have to know about the electrical rating?

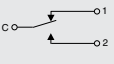
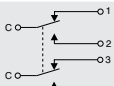
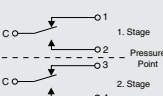
As with most dry contact switching devices, the maximum switching power of standard foot switches is rated in voltage and amperage—helpful when selecting the proper cable size as well. Some foot switches also reference horsepower, although it is more accurate to use a Motor Full Load Amperage Chart to determine the maximum size load a foot switch can control.

### What do I have to know about the contacts for the foot switch?

Pedal contacts are configured as normally open (NO) or normally closed (NC), which indicates whether the switch is opened or closed when untouched—and the opposite when the pedal is depressed. Contact configurations may change depending on the switch you've ordered or the manufacturer. This table illustrates some typical configurations.

Form C contacts are typically “Break Before Make,” meaning the NC contacts break connection before the NO contacts make connection.

### Contact Configuration

Circuit Function	Contact Symbol	Other Common Expressions Used	Description
SPDT-SB (Single Pole, Double Throw, Single Break)		<ul style="list-style-type: none"> <li>• Form C</li> <li>• Break, Make</li> <li>• Changeover</li> </ul>	With a SPDT-SB contact, one circuit opens at almost the same time another circuit closes. The contact can also be wired as a n.o. (contacts C and 2) or a n.c. (contacts C and 1).
DPDT-SB (Double Pole, Double Throw, Single Break)		<ul style="list-style-type: none"> <li>• Form CC</li> <li>• 2x Break, Make</li> <li>• 2x Changeover</li> </ul>	Twice the function of a SPDT-SB.
2x SPDT-SB (2x Single Pole, Double Throw, Single Break)		<ol style="list-style-type: none"> <li>1. Stage SPDT-SB*</li> <li>2. Stage SPDT-SB*</li> </ol> (* Form C; Break, Make; Changeover)	1 SPDT-SB contact before the pressure point and 1 SPDT-SB contact beyond the pressure point.

### Are there different pedal actions available?

Yes. Pedal action refers to what happens when the pedal is pressed and released. For example, momentary action is when the contacts change states once the pedal is pressed and return to their original state once released. Maintained (or latching) action is when the contacts change state when the pedal is pressed and remain so when released. The pedal must be pressed again to return the contacts to their original state. Two-stage action is when a user applies pressure to the pedal and the first set of contacts change state. As the user pushes further (past a pressure point), a second set of contacts change state. When the pedal is released the contacts return to their original state in reverse order.

### What is the difference between slow and snap action?

Slow action contacts use a slide system driven directly by the downward force of the pedal mechanism, while snap action contacts have a double spring-loaded slide system that snaps the contacts into place after a trip point is reached.

### What different contact plating materials are common?

Silver-nickel plating is the most common, but gold plating can also be used in low-current (<0.1 Amp) applications. Note that exposure to high voltages can cause gold to “burn off.”

### What is meant by the protection rating?

Foot switches are typically classified using the Ingress Protection (IP) system. These ratings define the level of sealing effectiveness of electrical enclosures against intrusion from foreign bodies whether dust, dirt, or moisture.

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## What type of cable and/or connector can be used?

Connectors allow the foot switches to be easily installed or replaced, and selection is based on the number on poles, their voltage and amperage, and the installation environment. For cabling, the only selection limitation is the voltage/amperage rating and the diameter of the conductors and cable jacket. A cable with a tough jacket material is preferred to protect against abrasion. The maximum sizes that the foot switches can accept can be found using the part specifications. Braided shielding is also an option to prevent electrical inference. Further, strain reliefs or cable gland seals can be used to seal the cable as it enters the foot switch. This can provide mechanical protection by helping to anchor the cable into the foot switch and prevent the cable from exceeding its maximum bend radius.

## How is the wire attached to the foot switch?

Many foot switches are available with screw terminals, solder terminals, or fast-on tabs to facilitate wiring, while some manufacturers offer pre-wire switches with standard or customized wire and/or cable.

## What else might I need to know prior to my final selection?

Foot switches are available in a variety of pedal and housing colors. Colors often denote a particular function or process. For example, according to the IEC, YELLOW indicates "CUTTING" and BLUE indicates "COAGULATION." Different housing colors can sometimes be ordered to match the aesthetics of the machine or instrument.

## What are the typical certification requirements?

Certification requirements vary by industry. IEC60601-1 is the typical standard for medical applications. There are also variations of this standard for HF surgical, x-ray, and laser equipment (for surgical, cosmetic, therapeutic, and diagnostic applications). Testing to these standards may be necessary depending on the type of equipment and application of the foot switch.



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