



What are the differences between emergency stop and emergency switching-off pushbuttons?

The Schneider offer includes two types of pushbutton.

a) Emergency switching-off with mechanical latching

These have direct opening action.

The speed of opening of the NC contacts, and therefore the generation of the OFF command, is dependent on the speed with which the button is pressed.

The OFF command can (under some circumstances) be generated before the latching mechanism has operated, that is a momentary OFF command can be generated without the mechanism latching.

b) Emergency stop with trigger action and mechanical latching.

These also have direct opening action. The opening of the NC contacts, and the operation of the latching mechanism, are independent of the speed with which the button is pressed.

Stored energy in a spring is used to operate both the latching mechanism and the opening of the NC contacts, so that the mechanism cannot latch without the OFF command being generated, and cannot generate the OFF command without latching the mechanism.

What is the position of legislation and standards on these two types of pushbutton?

The emergency stop function is defined and required by the Machinery Directive 2006/42/EC, EN/IEC 60204-1, and EN ISO 13850. IEN/IEC 60947-5-5 specifies the requirements for devices used to initiate the emergency stop function.

These all specify that it shall not be possible for the device to latch without generating the OFF (stop) command or to generate the OFF (stop) command without latching.

The emergency stop function is a complementary protective measure that is used to avert hazards to persons that can arise from machinery.

Emergency switching-off is defined for machines in EN/IEC 60204-1, and for electrical installations of buildings in IEC 60364-5-53.

It is intended to be provided where it can be necessary to remove the risk of electric shock or fire caused by electricity. Devices for emergency switching-off must be capable of latching. There is no requirement to use trigger-action devices for emergency switching-off, but such devices are permitted and arguably are safer since there use results in less risk that the supply might be switched off without the device being latched.

Additional information

EN ISO 13850 requires that where labels are used to identify emergency stop devices, the "inverted triangle within a circle" symbol is used.

The release of an emergency stop device shall not itself restart the machine. The release of an emergency switching-off device shall not re-energise the relevant part of the installation.

Devices other than pushbuttons may be used to initiate emergency stop or emergency switching-off functions. See the standards mentioned above for details.

The Schneider offer comprises two types of pushbutton

Emergency break with mechanical latching

These are SLOW BREAK pushbuttons.

The stop command (opening of N/C contacts) and mechanical locking (latching of the pushbutton) are dependent on the operating speed.

The stop command can be separate from the latching.

Emergency stop with snap action locking and mechanical latching

These are SNAP ACTION LOCKING pushbuttons.

The stop command and the locking are independent of the operating speed.

The mechanical stored energy system makes the stop command and the latching inseparable.

What is the position of the standards on these two types of pushbutton?

The standards specify two different reactions to two electrical risks connected with two areas in which electrical energy is used.

The emergency stop operation is the action to be used when a dangerous process or movement may endanger equipment or people.

The device to be installed is part of the machine. A risk assessment is necessary to take account of all the risk aspects: dynamic, electrical, etc.

The machinery directive, 98/37/EC, together with standards EN/IEC 60204-1 and EN/ISO 13850, specifies the actions and equipment to be used to achieve this result.

The machinery directive clearly specifies the exclusive use of snap action emergency stops with mechanical latching.

The emergency breaking operation is to be used to cut off the source of electrical energy to all or part of an installation when it may cause an electric shock or any other damage to equipment or people.

This is an exclusively electrical hazard such that those that may exist in the "Building" trade. International, European and French standards IEC60364-5-53 and NFC 15-100 specify the actions and equipment to be used to achieve this result.

It permits the use of two breaking devices:

=> Emergency break with mechanical latching

=> Emergency stop with snap action locking and mechanical latching

Important information

Emergency stops with snap action locking and mechanical latching must be marked with the logo: triangle within a circle on their labels.

Schneider products

The "Emergency stop" and "emergency break" part numbers are listed as such in the Schneider Electric Harmony XB4 and XB5 Pushbutton Controls catalogues.

Only the "mushroom head" concept is available for Harmony 9001 30 diameter range, and there is

therefore no emergency stop or emergency break in the sense of the standards for this technology. XB4 or XB5 22 diameter pushbutton controls must be used.

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