



Selection/Operation

The selection and use of a switch involves knowing the details of the particular installation. These control units are offered as push button operators (4 styles), two, three, and four position selector operators (3 styles each), push-pull units (4 styles), an illuminated push button and a variety of lockable devices. These devices will meet NEMA 12/13 requirements when properly installed in an appropriate enclosure. Each style of push button operator comes in a variety of colors. The selector switch styles are knob, wing lever and key operated. There are a number of different cams available to customize any installation. The nine standard contact blocks are modular in design and almost any combination is possible up to the recommended limit of three tiers of blocks on any operator. This recommendation is made to reduce the effects of standard tolerance deviation and ensure the devices will not produce intermittent operations. Also included in this section are pilot lights, lenses, and legend plates. The pilot lights are offered in two mounting configurations, 30.5mm and 18.0mm. The inputs to the lights range from 12vDC to 120vAC. Also, many of the pilot lights have built in transformers and/or miniature relays to provide any circuit compatibility.

Installation

Every installation is unique and specific instructions for installation and ordering can be found on page 53. Above all, observe all SAFETY REQUIREMENTS, PROCEDURES and LOCAL CODES. Only qualified electrical technicians should be allowed to perform an installation or replacement. On pages 46 through 57 you will find many different items that should satisfy any installation requirements. At the end of this section you can find a number of accessory items to facilitate in the installation of these devices. All mechanical devices, these units included, will wear out and eventually need to be replaced. The estimated minimum mechanical life is 1,000,000 operations. Regular scheduled Preventative Maintenance inspections are strongly recommended. Some conditions to look for are:

- Physical damage to the device.
- Loose connections or components.
- Broken or weak springs.

REES switches are designed and manufactured to surpass the standards of industry. On the facing page is a brief look at some of these regulations. The testing done by independent facilities is the minimum requirement that the REES switches far exceed. If other assistance is desired please contact the factory.

Definition

These switches are mechanical devices used to make and/or break one or more electrical circuits. They are single hole mounted devices designed to be solely operated by human hands.

Regulations

Following are excerpts from Domestic and Foreign Regulations that have applicability to Selector Switches, Guards and Enclosures.

• NEMA ICS 2 - 1988 (2-216.02) "GUARDED PUSH BUTTON"

A guarded push button is a push button so constructed that when properly mounted, the chance of inadvertent operation will be minimal. Recognized constructions are listed below.

- Recessed Push Button - A push button which has its surface for applied force below the surrounding surface in its initial and operated positions.
- Shrouded Push Button - A push button which has the relationship between the guard and the actuating means specified by the manufacturer.
- Shielded Push Button - A push button which requires some movement to operate which is essentially perpendicular to the movement required to enter the shield.
- Covered Push Button - A push button having an automatically returnable cover which must be displaced prior to operating the push button.
- Lockable Push Button - A push button which includes provision for locking in specified positions.

Push Button

A push button switch (push button) is a switch having a manually operable plunger, rocker or button for actuating the switch."

• NEMA ICS 2 - 1988 (2-216.06)

"Heavy-duty push button stations shall consist of push buttons and/or selector switches rated in accordance with ICS 2-216.22, and/or indicating lights in accordance with ICS 2-216.23, mounted in a suitable enclosure."

• NEMA ICS 2 - 1988 (2-216.08)

"Standard-duty selector switches shall have either two or three positions. Heavy-duty selector switches shall have two, three or more positions."

• NEMA ICS 2 - 1988 (2-216.22)

"Heavy-duty push buttons and selector switches shall have contact rating designations of A600, A300, A150, N600, N300, or N150 as shown in Table 2-125-1 for alternating current and Table 2-125-2 for direct current."

• CEN (European Committee for Standardization) EN 418 :1992 (4.1.2)

"The control device and its actuator shall apply the principle of positive mechanical action."

• CEN (European Committee for Standardization) EN 418 :1992 (4.4.3)

"The emergency stop actuators shall be coloured red. As far as a background exists behind the actuator and as far as it is practicable, it shall be coloured yellow."

• Ford Manufacturing Standards EA 1 - Sept. 1994 (1.1)

"This Standard applies primarily to standard size, heavy duty, one-hole mounted, oil-tight push buttons and accessory devices such as selector switches, pilot lights, etc., for mounting as described in Section 2.1.1."

• Ford Manufacturing Standards EA 1 - Sept. 1994 (1.4.1)

"A "unit" as used throughout this Standard means any push button, selector switch, pilot light, etc., suitable for single hole mounting."

REES switches exceed the following:

Listed by Underwriters Laboratories per Standard UL 508
File No. E 58589

Certified by Canadian Standards Association per Standard C 22.2
File No. LR 3648

Certified by DEMKO to IEC/EN 60947-5-5 or IEC/EN 60947-5-1

Third party certified under DEMKO File #FI-17205

NEMA ICS 2-1988

IEC/EN 60947-5-5: Standard which applies to electrical emergency stop devices with a mechanical latching function. This standard also encompasses all requirements of regular electromechanical switches (60947-5-1)


IEC/EN 60947-5-1: Standard which applies to low-voltage switchgear and controlgear such as the electromechanical switches manufactured by REES, Inc.

Following are definitions of terms as relating to Push Button and Selector Switches:

Emergency Stop - Function which is intended: to avert arising or to reduce existing hazards to persons, damage to machinery or to work in progress; to be initiated by a single human action when the normal stopping function is inadequate for this purpose. Hazards for the purpose of this standard are those which may arise from: functional irregularities (malfunctioning of the machinery, unacceptable properties of the processed material, human errors); normal operation.

Push Button - A push button switch (push button) is a switch having a manually operable plunger, rocker or button for actuating the switch.

Selector Switch - is a switch having a manually operated lever and shaft arrangement on which is mounted cams that actuate the contacts in different unique sequences.

Positive Break -  The achievement of contact separation as the direct result of a specified movement of the switch actuator through non-resilient members. (e.g. NOT dependent upon springs)

Positive Transfer - A contact system so designed that, it remains in one state (NO or NC) until the switch actuator moves to a "point of no return" then the contacts transfer and cannot be teased.

Slow-Make / Slow-Break - A contact system that opens and/or closes at the same rate (speed and time) that the actuator is moved.

Snap Action - A rapid motion of the contacts from one state to another, that is independent of the rate of travel of the actuator. Similar to "Positive Transfer".

Operating Force - The amount of pushing or pulling force (in pounds) necessary to change the state of the switch from an at rest condition to one of contact change, that is, to make a set of Normally Open contacts or break a set of Normally Closed contacts.