

# Interlock Switches

## Tongue Switches

### Elf



### Description

The Elf is a tongue (or key) operated safety interlock switch designed to fit at the leading edge of sliding, hinged or liftoff guards. The Elf's unique miniature housing (only 75 × 25 × 29mm) makes it the smallest interlock currently available. It is designed for smaller machines such as printers, copiers or domestic machinery which, until now, have been unable to use safety interlocks due to space restrictions. With its dual entry slots and rotatable head, the versatile Elf can offer up to eight different actuator entry options.

Operation of the switch is achieved through the insertion of a specially profiled stainless steel key that is permanently mounted to the guard door. The semi-flexible key allows the Elf to be used on small radii doors (60mm or 2.36in).

The Elf is available with 2 N.C. or 1 N.O. and 1 N.C. safety contact and conduit entry (1 × M16 or connector style) sealed to IP67 (watertight and dustproof). A blanking plug is supplied for the unused key entry.

### Features

- Ideal for small, light weight guards
- The smallest interlock switch available
- Contacts, 2 N.C. or 1 N.O. & 1 N.C.
- Eight possible actuator entry points, easy to install
- Environmental protection: IP67

### Specifications

|                                      |  |
|--------------------------------------|--|
| Standards                            | EN954-1, ISO13849-1, IEC/EN60204-1, NFPA79, EN1088, ISO14119, IEC/EN60947-5-1, ANSI B11.19, AS4024.1 |
| Category                             | Cat. 1 Device per EN954-1<br>Dual channel interlocks suitable for Cat. 3 or 4 systems                |
| Approvals                            | CE marked for all applicable directives, cULus and BG  |
| Safety Contacts                      | 1 N.C. or 2 N.C. direct opening action   |
| Designation/Utilization Cat.         | A600/AC-15 (Ue)<br>(Ie)<br>N600/DC-13 (Ue)<br>(Ie)   |
|                                      | 600V 500V 240V 120V<br>1.2A 1.4A 3A 6A<br>600V 500V 250V 125V<br>0.4A 0.55A 1.1A 2.2A                |
| Thermal Current (Ith)                | 10A  |
| Minimum Current                      | 5V 5mA DC  |
| Safety Contact Gap                   | >2mm (0.078in)   |
| Rtd. Impulse withstand Volt.         | (Uimp) 2500V   |
| Auxiliary Contacts                   | 1 N.O.   |
| Pollution Degree                     | 3  |
| Actuator Travel for Positive Opening | 3.6mm (0.141in)  |
| Min Operating Radius                 | 150mm (5.90in)<br>60mm (2.36in) with GD2 kit   |
| Break Contact Min Force              | 6N (1.35lb)  |
| Max Actuation Speed                  | 160mm (6.29in) per sec   |
| Max Actuation Frequency              | 2 Cycle per sec  |
| Case Material                        | UL approved glass filled polyester   |
| Actuator Material                    | Stainless Steel  |
| Protection                           | IP67   |
| Conduit Entry                        | 1 x M16 or quick-disconnect style  |
| Operating Temperature                | -20°C to +80°C (-4°F to +176°F)  |
| Fixing                               | 2 x M4   |
| Mounting                             | Any position   |
| Mechanical Life                      | 1,000,000 operations   |
| Electrical Life                      | 1,000,000 operations   |
| Weight                               | 60g (2.11oz)   |
| Colour                               | Red  |


● Conductive pollution occurs, or dry, non conductive pollution occurs which becomes conductive due to condensation.

### Applications








**Note:** Lift-off guards require good alignment when using tongue actuated interlock switches.  
**IMPORTANT:** It must not be possible to lift the guard without actuating the interlock. An interlock on either side may be required.

**Product Selection**

| Safety Contacts   | Auxiliary Contacts | BBM/MBB  | Actuator                                    | Catalogue Number |                               |                  |
|---|--------------------|--|---|------------------|-------------------------------|------------------|
|   |                    |  |   | M16 Conduit      | M16 Conduit/<br>1/2in Adaptor | Quick Disconnect |
| 1 N.C.  | 1 N.O.             | BBM  | Flat  | 440K-E33036      | 440K-E33029                   | 440K-E33074      |
|   |                    |  | 90°   | 440K-E33040      | 440K-E33030                   | 440K-E33025      |
|   |                    |  | GD2 Metal Align. Guide w/Semi-Flex Actuator | —                | 440K-E33031                   | 440K-E33075      |
|   |                    |  | —   | 440K-E33014      | —                             | 440K-E33076      |
| 2 N.C.  | —                  | —  | Flat  | 440K-E33080      | 440K-E33037                   | 440K-E33077      |
|   |                    |  | 90°   | 440K-E33041      | 440K-E33045                   | 440K-E33024      |
|   |                    |  | GD2 Metal Align. Guide w/Semi-Flex Actuator | —                | 440K-E33046                   | 440K-E33078      |
|   |                    |  | —   | 440K-E33047      | —                             | 440K-E33079      |
|  |                    | Recommended mating cable, 2m (6.5ft). See page 15-10 for details and additional lengths. |   |                  |                               | 889D-F4AC-2      |

**Accessories**

| Description  | For Dimensions See Page | Catalogue Number |
|--|-------------------------|------------------|
| <br>Flat Actuator   | 14-6                    | 440K-A21014      |
| <br>90° Actuator  | 14-6                    | 440K-A21006      |
| <br>GD2 Metal Alignment Guide with Semi-Flexible Actuator | 14-6                    | 440K-A21030      |
| <br>Alignment Guide                                       | 14-6                    | 440K-A21069      |
| <br>Mounting Plate  | 14-6                    | 440K-A33624      |

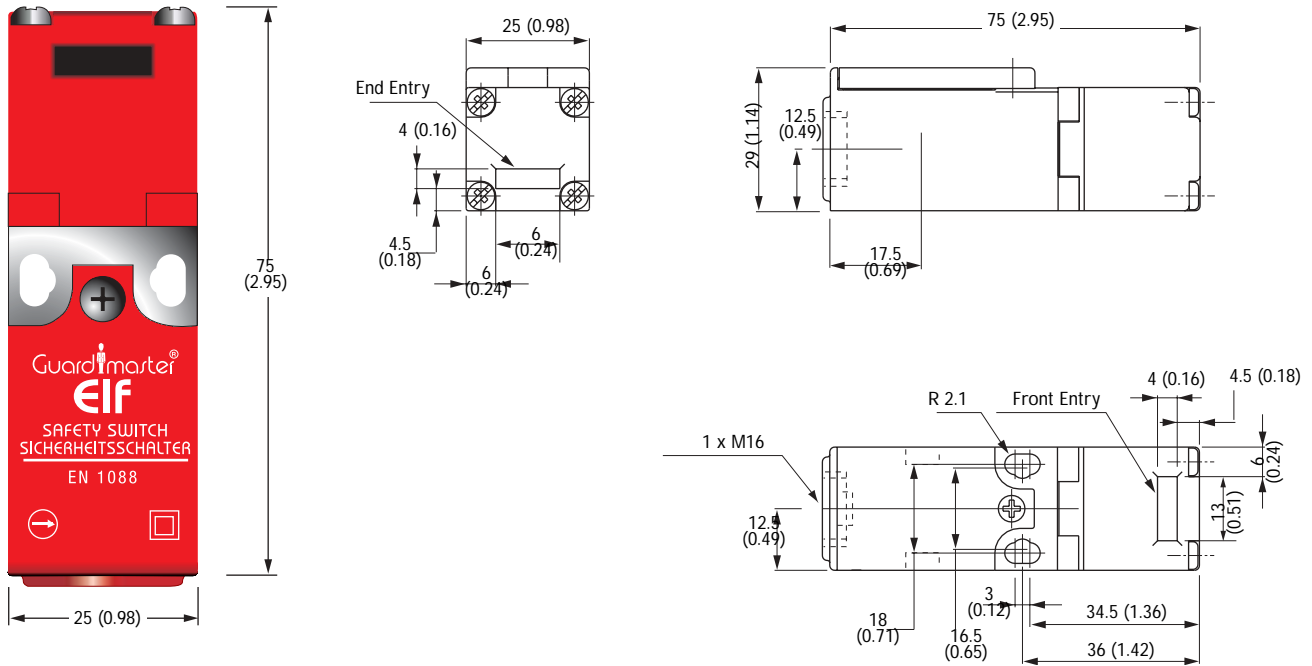
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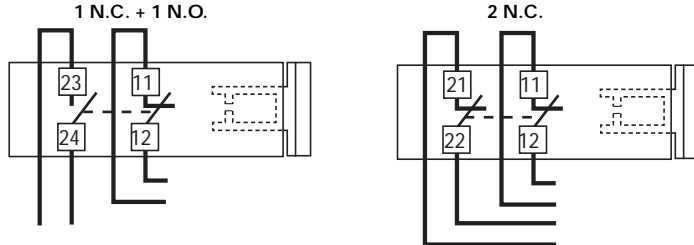
### Elf

#### Approximate Dimensions—mm (inches)

Dimensions are not intended to be used for installation purposes.



#### Typical Wiring Diagrams (shown with guard closed, actuator inserted)

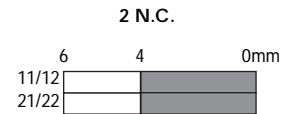
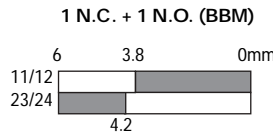


| Connector Pinout |   | 1 N.C. + 1 N.O. |         | 2 N.C.   |         |
|------------------|---|-----------------|---------|----------|---------|
|                  |   | Terminal        | Contact | Terminal | Contact |
|                  | 1 | 11              | N.C.    | 11       | N.C.    |
|                  | 3 | 12              | N.C.    | 12       | N.C.    |
|                  | 2 | 23              | N.O.    | 21       | N.C.    |
|                  | 4 | 24              | N.O.    | 22       | N.C.    |

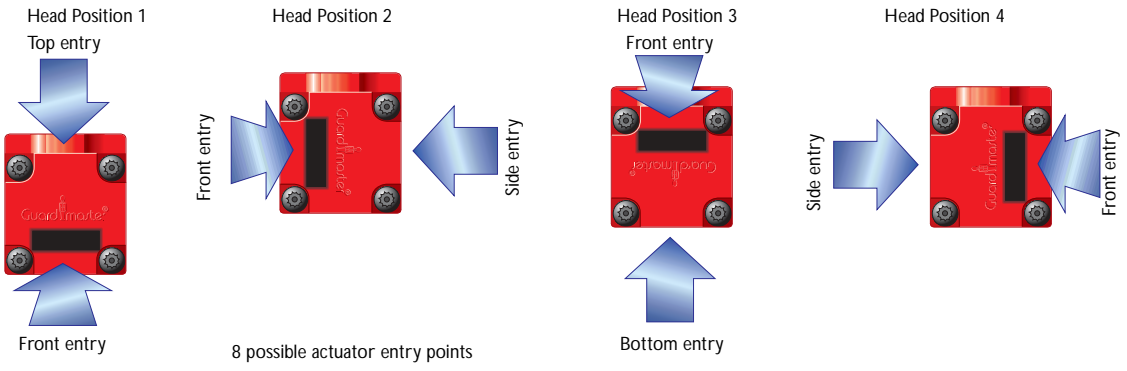
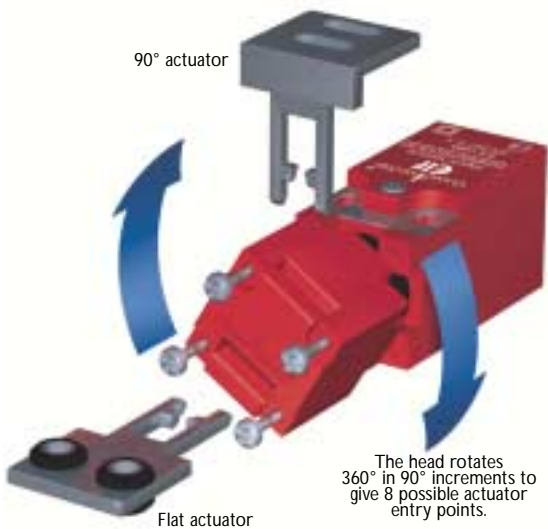
#### Contact Action

□ Contact Open ■ Contact Closed

Actuator withdrawal distance from full insertion



Application Details



GD2 Metal Alignment Guide with semi-flexible actuator

