Guard Lock Safety-Door Switch

- Release protective cover locks using controller signals or pushbutton switches after the cutting tool stops moving due to inertia.
- A mechanical lock is applied automatically when the Operation Key is inserted. A high level of safety is achieved using a mechanism where the lock is only released when voltage is applied to the solenoid.
- Conforms to EN (TÜV) standards corresponding to the CE marking.
- Certified by UL, CSA and CCC standards.
- The Switch contact is opened by a direct opening mechanism (NC contacts only) when the protective cover is opened. Direct opening mechanism that is EN-certified is indicated by on the Switch.
- Auxiliary release key ensures easy maintenance and unlocks the door in the case of a power failure.
- Tough aluminum die-cast body incorporating a switch box with degree of protection satisfying IP67, UL, and CSA TYPE6P, 13.
- Models incorporating easy-to-see indicators for monitoring and those using an adjustable Operation Key for a swinging door are available.
- The mounting direction of the head can be changed to allow the Operation Key to be inserted from four directions.
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days.

Specifications

Standards and EC Directives
Conforms to the following EC Directives:
- Machinery Directive
- Low Voltage Directive
- EN 1088

Certified Standards

<table>
<thead>
<tr>
<th>Certification body</th>
<th>Standard</th>
<th>File No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TÜV Rheinland</td>
<td>EN 60947-5-1 (certified direct opening) GS-ET-19</td>
<td>R9451050</td>
</tr>
<tr>
<td>UL</td>
<td>UL 508</td>
<td>E76675</td>
</tr>
<tr>
<td>CSA</td>
<td>CSA C22.2, No. 14</td>
<td>LR45746</td>
</tr>
<tr>
<td>CQC (CCC)</td>
<td>GB14048.5</td>
<td>2003010305073836</td>
</tr>
</tbody>
</table>

Certified Standard Ratings

TÜV (EN 60947-5-1), CCC (GB14048.5)

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard Model</th>
<th>Indicator Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilization category</td>
<td>AC-15</td>
<td>AC-15</td>
</tr>
<tr>
<td>Rated operating current (Ie)</td>
<td>3 A</td>
<td>6 A</td>
</tr>
<tr>
<td>Rated operating voltage (Ue)</td>
<td>250 V</td>
<td>115 V</td>
</tr>
</tbody>
</table>

Note: Use a 10 A fuse type gl or gG that conforms to IEC 60269 as a short-circuit protection device.

UL/CSA (UL 508, CSA C22.2 No. 14) A300

<table>
<thead>
<tr>
<th>Rated voltage</th>
<th>Carry current</th>
<th>Current (A)</th>
<th>Volt-amperes (VA)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Make</td>
<td>Break</td>
</tr>
<tr>
<td>120 VAC</td>
<td>10 A</td>
<td>60</td>
<td>6</td>
</tr>
<tr>
<td>240 VAC</td>
<td></td>
<td>30</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: The UL/CSA certified rating for products with indicators (-A) is 6 A/115 VAC.

For full product information, visit www.sti.com. Use the SpeedSpec Code or scan the QR Code for quick access to the specific web page.
## Connections

### Contact Forms

Diagrams show state with key inserted and lock engaged.

<table>
<thead>
<tr>
<th>Model</th>
<th>Contact</th>
<th>Contact form</th>
<th>Operating pattern</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>D4BL-□□□□□</td>
<td>1NC/1NO+1NC</td>
<td><img src="image" alt="Diagram" /></td>
<td><img src="image" alt="Diagram" /></td>
<td>Only NC contacts 11-12 have a certified direct opening mechanism.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The terminals 11-12 and 23-24 can be used as unlike poles.</td>
</tr>
<tr>
<td>D4BL-□□□□□</td>
<td>2NC+1NC</td>
<td><img src="image" alt="Diagram" /></td>
<td></td>
<td>Only NC contacts 11-12 have a certified direct opening mechanism.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The terminals 11-12 and 21-22 can be used as unlike poles.</td>
</tr>
</tbody>
</table>

Note: The EN-certified direct opening mechanism is indicated by on the switch.

### Contact Form (D4BL-2GRD-AT)

![Diagram](image)
Dimensions and Operating Characteristics

**Switches**

**D4BL-□□□□-□**

- **Operating characteristics**
  - **D4BL-□□□□-□**
  - **Key insertion force**
    - 19.61 N max.
  - **Key extraction force**
    - 19.61 N max.
  - **Movement before being locked**
    - 15 mm max.
  - **Total Travel**
    - 23 mm min.

**D4BL-2GRD-AT**

- **Operating characteristics**
  - **D4BL-2GRD-AT**
  - **Key insertion force**
    - 19.61 N max.
  - **Key extraction force**
    - 19.61 N max.
  - **Movement before being locked**
    - 15 mm max.
  - **Total Travel**
    - 23 mm min.

**Notes:**
1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
2. There are fluctuations in the contact ON/OFF timing for 2NC contacts. Confirm performance before application.

**Operation Keys**

- **D4BL-K1**
- **D4BL-K2**
- **D4BL-K3**

**www.sti.com/info**
Dimensions and Operating Characteristics (continued)

With Operation Key Inserted

D4BL + D4BL-K1

D4BL + D4BL-K2

D4BL + D4BL-K3

Notes:
1. Unless otherwise specified, a tolerance of ±0.4 mm applies to all dimensions.
2. In the above diagrams, the Operation Key is inserted from the front.
Application Example with G9SA Safety Relay Unit

G9SA-321-T□ (24 VAC/VDC) + D4BL-□□D□A-□, - □□D□B-□□(Mechanical Lock Type) Circuit Diagram (Manual Reset)a

S1: Safety Limit Switch with direct opening mechanism (D4B-N, D4N, D4F)
S2: Guard Lock Safety-door Switch
S3: Reset switch
S4: Lock release switch
KM1 and KM2: Magnetic Contactor
M: 3-phase motor

Timing Chart

Limit switch S1
Guard Lock Safety-door Switch S2
Lock release signal S4
Stop signal Reset switch S3
K1 and K2 (NC) K1 and K2 (NO) K3 and K4 (NC) K3 and K4 (NO) KM1 and KM2 (NC) KM1 and KM2 (NO)
Operation instruction
Motor rotation

Guard can be opened
OFF-delay time

Note: This example circuit is for Category 3.
D4BL Safety Interlock Switches

Model Number Structure

### Switch
D4BL – □ □ □ □ – □

1. **Conduit Size (2-conduit)**
   - 1: Pg13.5
   - 2: G1/2
   - 4: M20

2. **Built-in Switch (with Safety Switch and Lock Monitor Switch Contacts)**
   - C: 1NC/1NO (slow-action) + 1NC (slow-action)
   - D: 2NC (slow-action) + 1NC (slow-action)

3. **Head Mounting Direction**
   - R: Four mounting directions possible (Right-side mounting at shipping)

4. **Door Lock and Release (Auxiliary Release Key in Incorporated by all models)**
   - A: Mechanical lock/24 VDC solenoid release
   - G: 24 VDC solenoid lock/mechanical release

5. **Indicator**
   - Blank: Without indicator
   - A: 10 to 115 VAC or VDC driving (with orange and green LED indicator unit)

### Operation Key
D4BL-K □

1. **Operation Key Type**
   - 1: Horizontal mounting
   - 2: Vertical mounting
   - 3: Adjustable mounting (horizontal)

#### List of Models

<table>
<thead>
<tr>
<th>Switches (Operation Keys are sold separately)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lock method</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mechanical lock</td>
</tr>
<tr>
<td>PG13.5</td>
</tr>
<tr>
<td>110 VAC</td>
</tr>
<tr>
<td>G1/2</td>
</tr>
<tr>
<td>110 VAC</td>
</tr>
<tr>
<td>NPT</td>
</tr>
<tr>
<td>M20</td>
</tr>
<tr>
<td>110 VAC</td>
</tr>
<tr>
<td>Solenoid lock</td>
</tr>
<tr>
<td>Pg 13.5</td>
</tr>
<tr>
<td>G1/2</td>
</tr>
<tr>
<td>NPT</td>
</tr>
<tr>
<td>M20</td>
</tr>
</tbody>
</table>