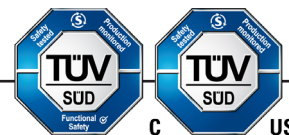
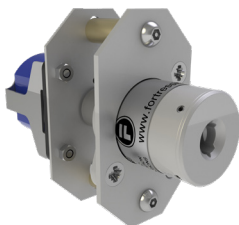
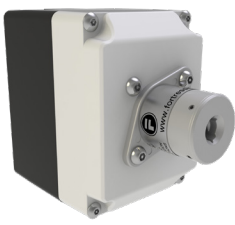



## Operating Instructions: Key Operated Switch



| Description  | S Unit   | S-EM  |
|--|--|---|
| <p>The <b>S Unit</b> / <b>S-EM</b> / <b>S-WP</b> is suitable for isolation or switching current and may be used to isolate power to machinery during access.</p> <ul style="list-style-type: none"> <li>• Direct drive operation - positively opens contacts</li> <li>• The standard sequence is: <ul style="list-style-type: none"> <li>Key trapped - Power on</li> <li>Key free - Power off</li> </ul> </li> <li>• Available as 20A, 32A &amp; 63A variant</li> <li>• Most common contact arrangements are 2NO2NC &amp; 4NO. Other contact arrangements available on request</li> <li>• Lock mounted through hole in panel</li> </ul> <p><b>S-EM:</b></p> <ul style="list-style-type: none"> <li>• Robust metal enclosure for standalone mounting</li> <li>• IP67 rated</li> <li>• 2 x M20 cable entry conducts at base of unit</li> </ul> <p><b>S-WP:</b></p> <ul style="list-style-type: none"> <li>• Seal rated to IP66</li> <li>• Lock mounted front of panel</li> </ul> |  |  |
|  | <b>S-WP</b>  |   |
|  |  |   |

### Important:

This product is designed for use according to the installation and operating instructions enclosed. It must be installed by competent and qualified personnel who have read and understood the whole of this document prior to commencing installation. Any modification to or deviation from these instructions invalidates all warranties. Fortress Interlocks Ltd accepts no liability whatsoever for any situation arising from misuse or mis-application of this product. This product is not to be used as a Mains Isolator or Emergency Stop. The unit is a component to be added to a permanent electrical installation meeting the requirements of the applicable IEC/EN standards. **The voltages used on the S terminals must all be of the same type. i.e. ALL Harzardous Live or ALL Machine Extra Low Voltage.**

**IF YOU HAVE ANY QUESTIONS OR QUERIES OF ANY NATURE PLEASE CONTACT THE SUPPLIER WHO WILL BE PLEASED TO ADVISE AND ASSIST.**

**It is the user's responsibility to implement proper management controls and risk assessment for master and spare keys, without which they can be used to defeat trapped key interlock systems; ISO/TS 19837 can offer further guidance.**

| Technical Specifications  | S Unit  | S-EM  | S-WP  |
|---------------------------|---|---|---|
| Mounting Plate            | Stainless Steel   | Die-cast zinc for A02040 & A02022 Stainless Steel for all other units | Plastic injection moulding with integrated O-Ring seal. |
| Ingress Protection        | -   | IP67  | IP66  |
| Lock Mechanism            | Die-cast zinc body with stainless steel operating mechanism or full stainless steel (selected separately) |   |   |
| Key                       | Stainless steel (selected separately)   |   |   |
| Minimum Operating Current | 5mA at 20v  |   |   |

### Safety Data

|                        |  |                                    |
|------------------------|--|------------------------------------|
| Standards              | ISO EN14119:2013<br>EN13849-1:2008<br>EN13849-2:2012<br>EN62061:2005 |                                    |
| Certifications         | CE marked for all applicable directives                              |                                    |
| Category               | Cat. 4, PLe (EN/ISO 13849-1) and SIL3 (EN/IEC 62061)                 |                                    |
| Functional safety data | B10d   | 5,000,000                          |
|                        | DC   | High 99% (with correct monitoring) |

# Operating Instructions: Key Operated Switch

## Standard Functionality

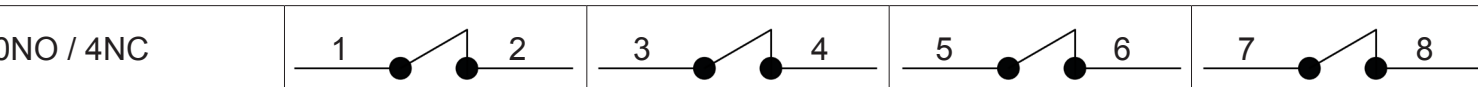
Mount these units well away from sources of vibration or use anti-vibration mountings in order to avoid the effects of vibration, shock and bump.

## Electrical Connection

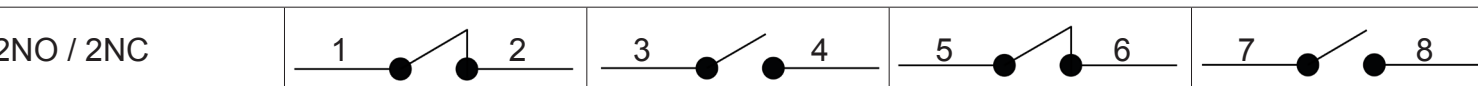
Check that the unit to be installed is of the same electrical type and voltage rating as the machine control circuits. Note that all units are designed to operate at +/-10% of the nominal supply voltage. The use of an incorrect voltage can seriously damage the unit. The electrical system must incorporate fuse protection for all circuits, using a Quick-Acting (F) fuses, to IEC 127. Please refer to figure 1 for the Terminal Numbers for the Key Operated Rotary Switch. Bond the unit to Earth potential via the Earth point provided. The earth wire used must be multi-stranded Yellow and Green PVC sheathed and approved to IEC with minimum conductor cross-sectional area. The Earth lead must be fitted such that it will be the last to be broken if the wiring loom is pulled from the product. When all wiring is complete, conduct a Protective Earth Test to IEC, clause 20. Test the unit for correct operation.

Figure 1: Wiring Diagram - Key Free

20A, 32A, 63A



20A



32A, 63A

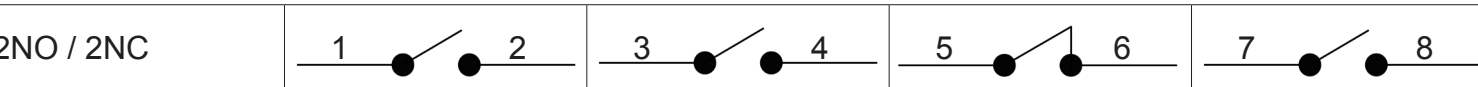


Figure 2: Dimensional Drawing - S-EM

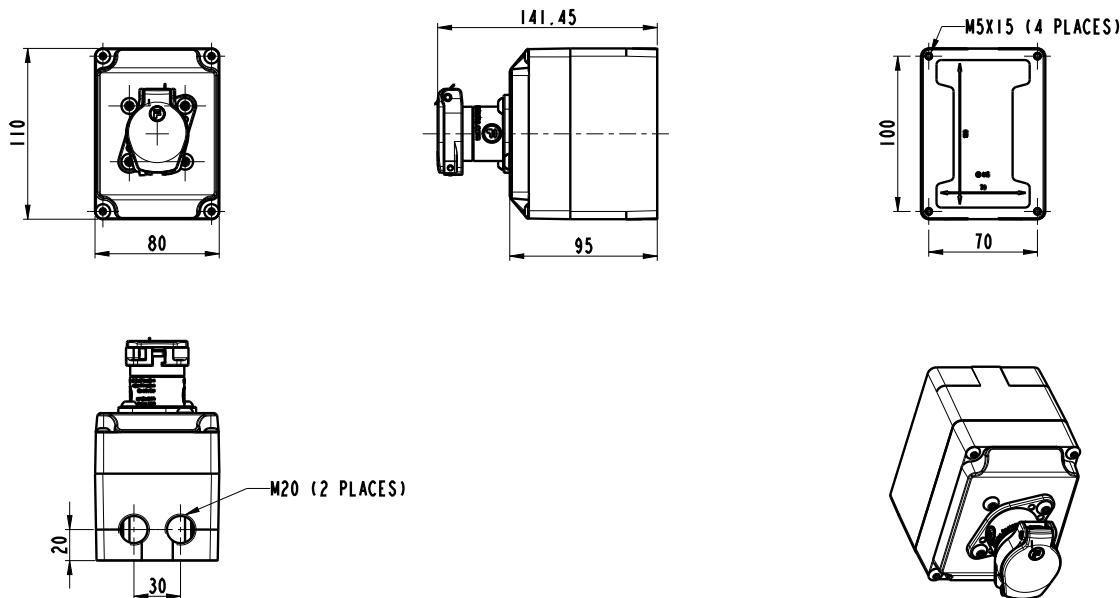


Figure 3: Dimensional Drawing - S-WP

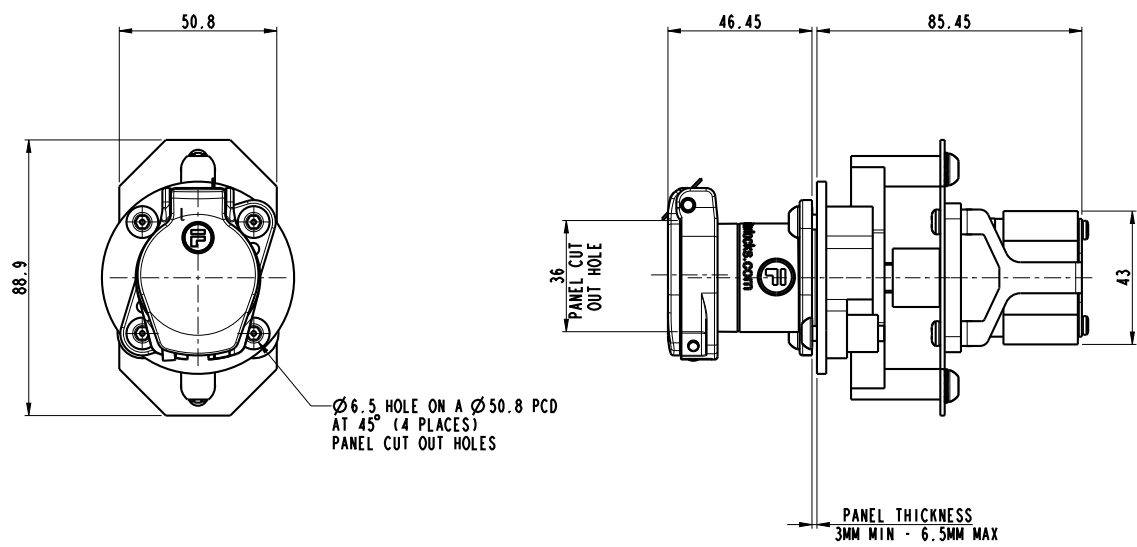
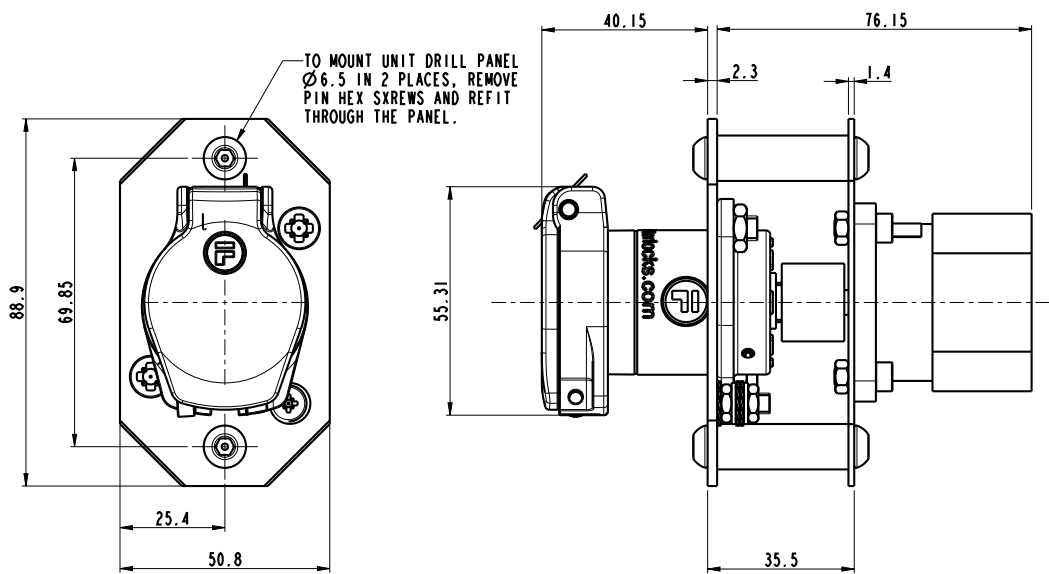


Figure 4 : Dimensional Drawing - S Unit



# Operating Instructions: Key Operated Switch

## Tools and Fixings Required - S Unit / S-WP

- Ø 6.5 Drill
- 6.35mm Hex Driver
- Ø 36 Drill / Hole saw
- 3.5mm Screwdriver

## Tools and Fixings Required - S-EM (20A / 32A)

- M4 Tap or Ø 4.5 Drill
- 3.5mm Flat Blade Electrical Screwdriver
- 4 x M4 Screws
- 4 x M4 Nuts
- 4 x M4 Washers
- Hex Driver
- Pin Hex Bit

## Tools and Fixings Required - S-EM (63A / 150A)

- M6 Tap or Ø 6.5 Drill
- 3.5mm Flat Blade Electrical Screwdriver
- 6.35mm Hex Driver
- 4 x M6 Screws
- 4 x M6 Nuts
- 4 x M6 Washers

**All fixings must be used.**

## Mounting S Unit / S-WP

Mount the units only in their correctly assembled condition to flat metal plates of minimum thickness 3.0mm.

1. Locate the unit so that all the lock is within easy reach.
2. Machine the panel for lock assembly and fixings
3. Remove the M6 screws and refit through panel.
4. All fixing screws must be permanently prevented from removal, either by vibration or by personnel using standard tools.

## Mounting S-EM

Mount this unit only in its correctly assembled condition to flat metal plate. Plate must be bended to earth potential.

1. Locate the unit so that the lock is within easy reach.
2. Mount the unit to the panel using the 4 x M4 screws, nuts and washers, as applicable.

## Maximum Permissible Wire Gauge

| Wire Type                    | Units           | 20A     | 32A    | 63A    |
|------------------------------|-----------------|---------|--------|--------|
| Single Core or Stranded Wire | mm <sup>2</sup> | 2 x 2.5 | 2 x 6  | 2 x 16 |
|                              | AWG             | 2 x 12  | 2 x 8  | 2 x 6  |
| Flexible Wire                | mm <sup>2</sup> | 2 x 2.5 | 2 x 4  | 2 x 10 |
|                              | AWG             | 2 x 14  | 2 x 10 | 2 x 6  |

The 20A switch will accept 2 wires per terminal, one either side of the terminal screw, Only copper wires are to be used.

## Wire Strip Length

| Switch | Strip Length |
|--------|--------------|
| 20A    | 8            |
| 32A    | 11           |
| 63A    | 15           |

## Minimum Voltage and Current

The standard 20A switch has been tested to work down to 5mA at 20V. For lower voltage and current requirements, please contact Fortress.

# Operating Instructions: Key Operated Switch

## DC Current Ratings

The rotary switches are all AC rated but have the following DC ratings:

| DC Voltage | 20A Switch | 32A Switch | 63A Switch |
|------------|------------|------------|------------|
| 24V        | 20A        | 32A        | 63A        |
| 48V        | 12A        | 25A        | 50A        |
| 60V        | 4.5A       | 10A        | 16A        |
| 110V       | 1A         | 2A         | 3A         |
| 220V       | 0.4A       | 0.6A       | 0.7A       |
| 440V       | 0.27A      | 0.3A       | -          |

## Mechanical and Electrical Life

The mechanical life of the lock mechanism is 1,000,000 operations. The life of the rotary switch is shown below:

| Switch Type | Mechanical Life (N° of Operations) | AC - 21A Electrical Life (N° of Operations) |
|-------------|------------------------------------|---|
| 20A         | 1,500,000                          | 100,000                                     |
| 32A         | 1,500,000                          | 100,000                                     |
| 63A         | 1,500,000                          | 100,000                                     |

Once the maximum electrical or mechanical number of operations has been reached the unit must be replaced.

## International Current Variations

| BS/IEC/VDE Current Rating | UL Current Rating | CSA Current Rating |
|---------------------------|-------------------|--------------------|
| 20A                       | 20A               | 16A                |
| 32A                       | 30A               | 30A                |
| 63A                       | 65A               | 65A                |

## Service and Inspection

**Regular weekly inspection of the following is necessary to ensure trouble-free, lasting operation:**

- Correct switching function.
- Secure mounting of components.
- Debris and wear.
- Loose cable terminals.

If lubrication / cleaning is required for lock mechanism use WD40.

### **DO NOT USE DRY LUBRICANT.**

The frequency of lubrication / cleaning will depend on the environment. Lubricate / clean at least once a week when used in the concrete industry. There are no user serviceable parts in this unit. If damage or wear is found the whole unit must be replaced.

## Disposal

This interlock does not contain any certified hazardous materials so should be disposed of as industrial waste.

## Liability coverage is voided under the following conditions:

- If these instructions are not followed.
- Non-compliance with safety regulations.
- Installation and electrical connection not performed by authorised personnel.
- Non-implementation of functional checks.

## Environmental Specification

Environment Type: Indoor  
Max. Altitude: 2000m  
Ambient Temperature: -5°C to +40°C  
Maximum Relative Humidity: 80%@≤31°C 50%@40°C  
Transient Overvoltages Installation: Uimp 2500V  
Pollution Degree: (IEC 664) Degree 2

**The manufacturer reserves the right to modify the design at any time and without notice.**

**This guide should be retained for future reference.**