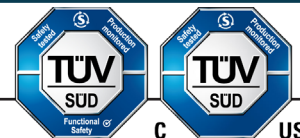

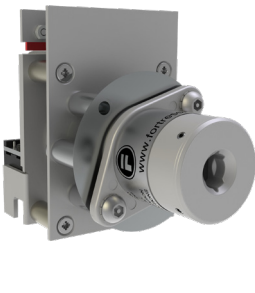



Operating Instructions: Mini Solenoid Controlled Key Switch



Control Interlocking

Description	MSS Unit	MSS-WP	MSS-EM
<p>The MSS unit is used where the key(s) need(s) to remain trapped until an electrical signal has been received. Available as a power to unlock solenoid only.</p> <p>MSS Unit / MSS-WP Unit</p> <ul style="list-style-type: none"> Panel mounted with or without IP67 seal. Fits within a 65mm(W) x 95mm(L) x 55mm(H) envelope. Suitable for machines with a rundown cycle. <p>MSS-EM Unit</p> <ul style="list-style-type: none"> Supplied in standalone zinc alloy enclosure 2 x NC 3A Key monitoring contacts. 2 x NC 3A Solenoid monitoring contacts. Pushbutton included to be wired to unlock solenoid. 			

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. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. 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 misapplication 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 MSS terminals must all be of the same type. i.e. ALL Hazardous live or ALL Machine Extra Low Voltage.

IF YOU HAVE ANY QUESTIONS OR QUERIES OF ANY NATURE WHATSOEVER 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	MSS / MSS-WP	MSS-EM
Housing Materials	Stainless Steel	Zinc Alloy
Lock Mechanism	Die-cast zinc body with stainless steel	
Mechanical & Electrical Life	1,000,000 Operations	
Power Consumption	12W (current at Nominal 24V DC = 500mA)	
Minimum Operating Current	5mA at 20v	
Minimum Voltage & Current for Switch Contact	1mA at 5VDC	
Maximum Operating Current	3A at 24V - AC-12, AC-15, DC-12, DC-13	
Cable Size	26 - 14 AWG	

Safety Data

Standards	EN60947-3:2009 ISO EN14119:2013 EN13849-1:2008 EN13849-2:2012 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: Mini Solenoid Controlled Key Switch

Functionality

Key Trapped State

When the solenoid is not energised, the key is trapped. The solenoid operated safety circuits and key safety circuits are closed.

Key Unlocked State

When voltage is applied to the solenoid, the solenoid safety circuits are positively opened.

MSS-EM - When voltage is applied to the solenoid the push button illuminates. On pressing the illuminated push button the solenoid safety circuits are positively opened.

Key Free State

When the control key is turned and removed, the contacts on the key safety circuits are positively opened.

Figure 1 - Wiring Diagrams

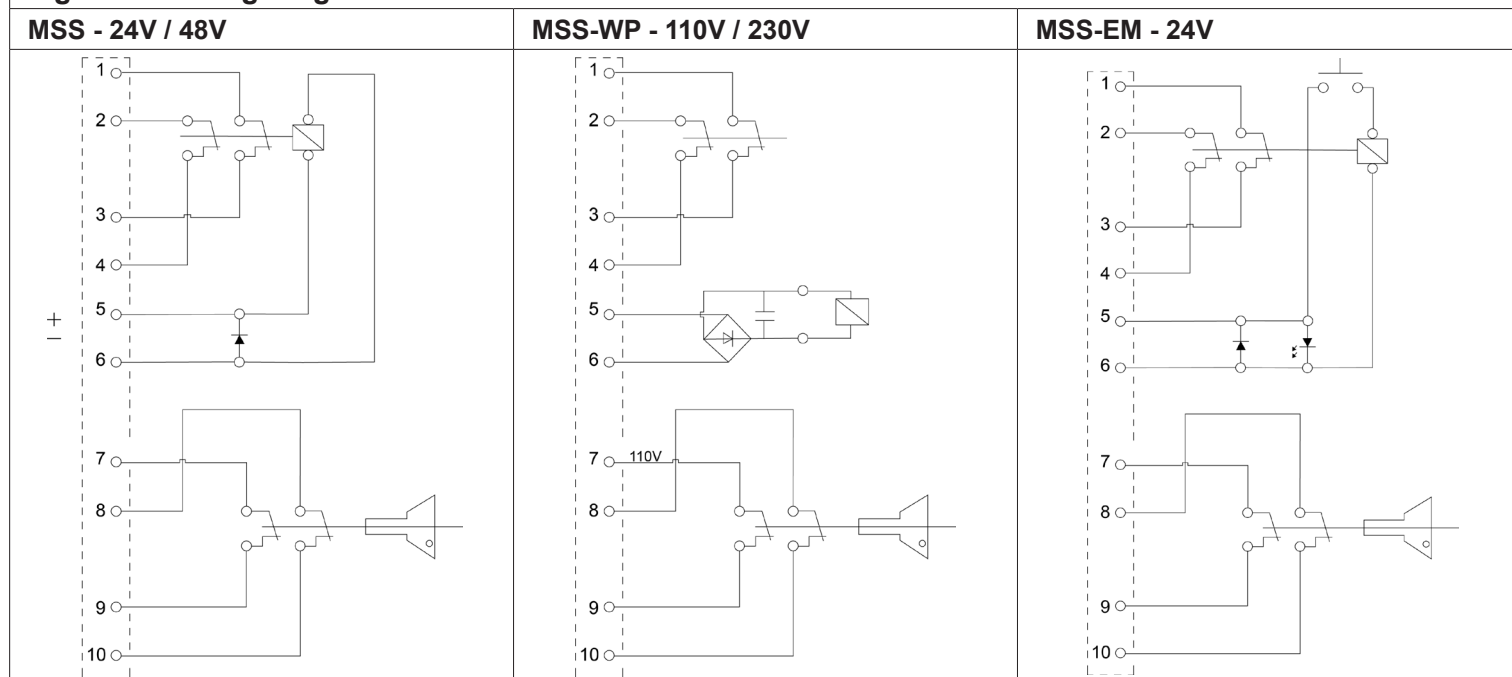
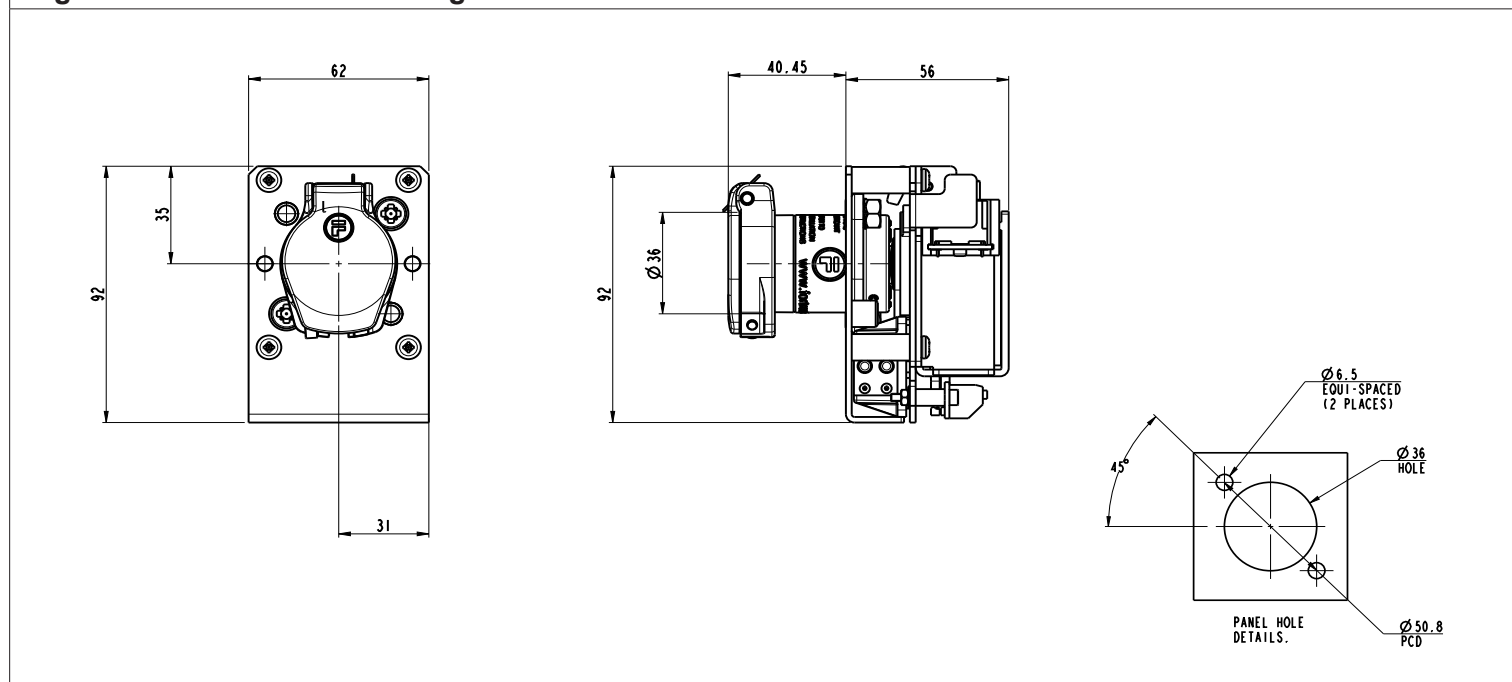


Figure 2 : Dimensional Drawing - MSS Unit



Operating Instructions: Mini Solenoid Controlled Key Switch

Figure 3 : Dimensional Drawing - MSS-WP

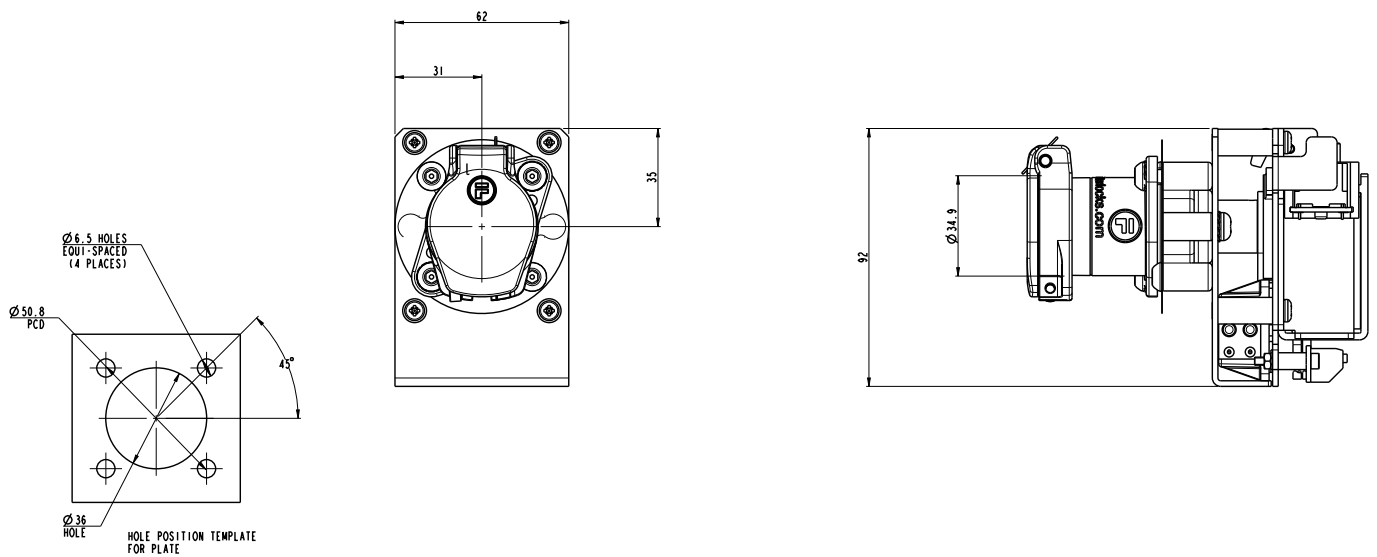
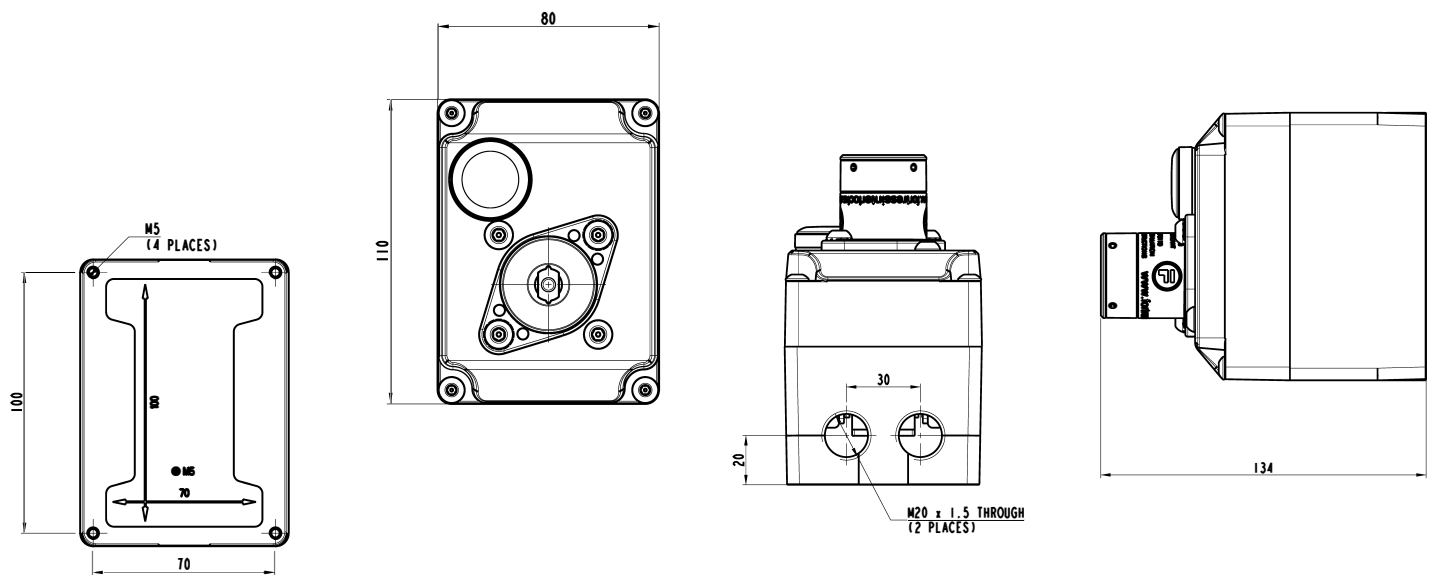


Figure 4 : Dimensional Drawing - MSS-EM



Tools and Fixings Required - MSS Unit / MSS-WP

- Dia. 6.5 Drill
- 3.5mm Flat blade electrical screwdriver
- 2 x M6 screws
- 2 x M6 washers

Tools and Fixings Required - MSS-EM

- Dia. 5.5 Drill
- 3.5mm Flat blade electrical screwdriver
- 4 x M5 screws
- 4 x M5 washers

All fixings must be used.

Operating Instructions: Mini Solenoid Controlled Key Switch

Mounting

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. The machine must be completely isolated from all electrical supplies before any installation commences.

1. Locate the unit so that the lock is within easy reach.
2. Machine the panels
3. Mount the MSS unit to the panel using the 2 x M6 (MSS-WP mounting uses 4 screws) screws and washers as applicable (4 x M5 screws and washers for MSS-EM). All fixing screws must be permanently prevented from removal, either by vibration or by personnel using standard tools.

Back of Board Mounting - MSS Unit / MSS-WP

Mount the unit only in its correctly assembled condition to flat metal plate. The plate must be bonded to earth potential. A sound earth connection must be made to the middle plate of the product. A shakerproof washer may be required on at least one fixing, to ensure Earth continuity.

Electrical Connection

1. Terminals 1 - 3 and 2 - 4 are N/C contacts opened mechanically by the solenoid operating. These are normally used as the solenoid operated safety circuits.
2. Terminals 5-6 are the solenoid power supply.
3. For D.C. terminal 5 is the 24V supply and terminal 6 is the OV.
4. Terminals 7-9 and 8-10 are N/C contacts opened mechanically when the key is turned and released. These are normally used as the key operated safety circuits. When a protective earth is required ensure it meets appropriate regulations for the installation.

Commissioning

Mechanical Function Test

1. Isolate electrical supplies.
2. Insert the key.
3. Check that the key is trapped in position when turned.
4. Manually override the solenoid to allow the removal of the key.
5. Check the key can be turned and removed.

Electrical Function Test

1. Check that all the switches are in the states shown in the wiring diagrams.
2. Apply voltage to the solenoid.
3. Check that the solenoid safety circuits are open. For MSS-EM units this is when the illuminated push button is pressed.
4. Remove the control key.
5. Check that the key operated safety circuits are open.

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.

There are no user serviceable parts in this unit. If damage or wear is found the whole unit must be replaced. 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. There are no user serviceable parts in this unit. If damage or wear is found the whole unit must be replaced. The complete interlock must be replaced after 1 million switching operations.

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.

Operating Instructions: Mini Solenoid Controlled Key Switch

Environmental Specification

Environment Type: Indoor
Max. Altitude: 2000m
Ambient Temperature: -5°C to +40°C
Maximum Relative Humidity: 80%@≤31°C 50%@40°C
Ingression Protection: IP65 & IP66 & IP67(MSS-EM)

Fortress Interlocks Ltd reserves the right to modify the design at any time and without notice.

This guide should be retained for future reference.