



DESIGNED &
MANUFACTURED
IN THE
UNITED
KINGDOM

SKORPION Trapped Key from IDEM

Innovation Ingenuity Excellence



Providing Machine Safety for YOU at Work



SKORPION Trapped Key Interlocking with Key Exchange

Skorpion - Product Overview

Designed and manufactured in the United Kingdom, SKORPION, IDEM's Trapped Key System has been developed to provide extremely robust mechanical coded key safeguarding and interlocking for hazardous machinery.

The system works on the principle of releasing coded mechanical keys in a pre-determined sequence to ensure machine power is isolated before any access can be gained to hazardous or dangerous machinery.

After the machine control has been isolated (first key turned in the system) the key from the isolator can then be used to release other trapped keys to enable access to the guarded areas.

After release of the first key (power isolation) safeguarding can be achieved without the need for electrical wiring, this makes the system ideal for use in harsh environments.

Available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal

Operating Principle

A trapped-key guarding system relies upon the transfer of keys between a power isolation switch (or control switch) and a locking mechanism fixed on a guard.

The essential feature of the system is that a removable key is trapped either in the guard lock, or in the power isolation switch.

The interlock on the guard is arranged so that the key can be released only when the guard has been closed and locked.

This allows transfer of the key from the guard to the power isolation switch.

Closing the switch traps the key, so that it cannot be removed while the isolator switch is in the ON position.

If there is more than one source of power, and therefore more than one circuit breaking element to be actuated, then a key-exchange block is necessary, to which all keys have to be transferred and locked in before the access key, which is of a different coding, can be released for transfer to the guard lock.

Where there is more than one access guard, the key exchange block will accommodate an equivalent number of access keys.

Where a number of operations have to be carried out in a pre-determined sequence, then the transferable key is locked in and exchanged for a different one at each stage.

Please see the "Basic" example and a more "Complex" example on the facing page for a visual explanation.

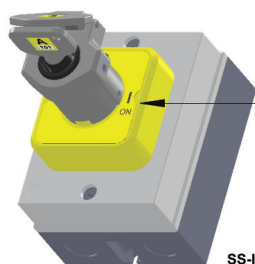
Advantages

- No reduction of integrity due to the distance between movable guard and control system.
- High mechanical integrity, robust fixings and holdings suitable for all types of guards.
- Eliminates the need for electrical wiring to each movable guard.
- Available in Stainless Steel 316 - making it suitable when the movable guard is placed in harsh or hostile environments.
- Suitable for CIP and SIP cleaning processes and can be high pressure hosed with detergents at high temperatures.
- Can be used where the movable guard requires to be removed completely.
- All keys are coded in the factory and it is virtually impossible to override the system.
- A trapped key system provides a quick yet safe and reliable access to machinery.
- Use of a trapped key system can also prevent shortcuts and enforce a logical set of procedures that need to be satisfied.
- Until the isolator key is returned to its original position within the lock, there is no way to enable the machinery to be re-started.



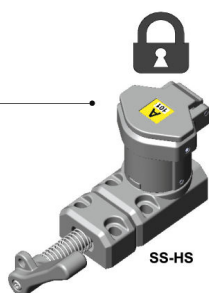


SKORPION Trapped Key Interlocking - Basic System

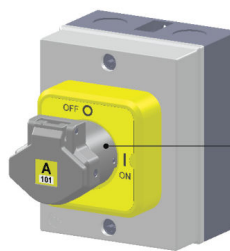


SS-ISB1-25

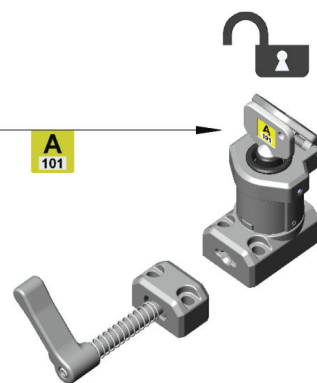
A
101



SS-HS



A
101



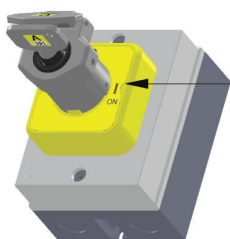
POSITION 1: MACHINE POWER ON - GUARD LOCKED
(ACCESS IS DENIED TO OPERATOR)

POSITION 2: MACHINE POWER OFF - GUARDS UNLOCKED
(ACCESS AVAILABLE TO OPERATOR)

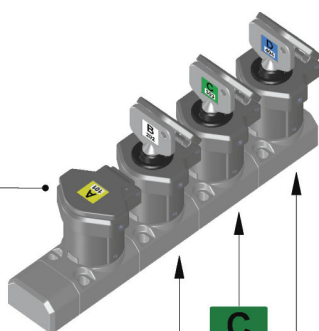


SKORPION Trapped Key Interlocking - Complex System

SS-ISB1-25



A
101



SS-KE-NS4

B
202

C
303

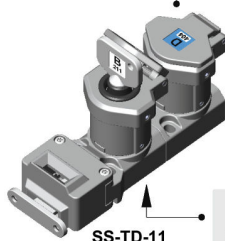
D
404



SS-HS



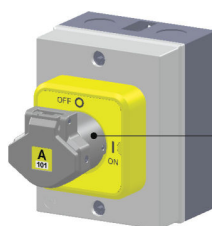
SS-TS
(Type A Actuator)



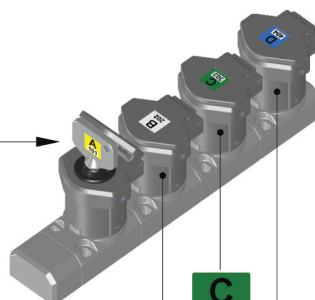
SS-TD-11
(Type A Actuator)

B
211

POSITION 1: MACHINE POWER ON - GUARDS LOCKED
(ACCESS IS DENIED TO OPERATOR)



A
101

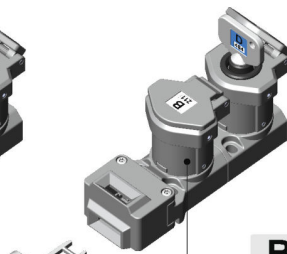


B
202

C
303

D
404

POSITION 2: MACHINE POWER OFF - GUARDS UNLOCKED
(ACCESS AVAILABLE TO OPERATOR)



B
211



SKORPION Trapped Key Interlocking - ISOLATION

ISOLATION SWITCH BOX 1 - ISB1:

ISB1



Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH BOX 1 RATING			
SS-ISB1-25	25A	690V	4 pole	
SS-ISB1-40	40A	690V	4 pole	

All isolation available with Stainless Steel or Mirror Polished Die Cast Metal Barrel Housing

ISOLATION SWITCH BOX 2 - ISB2:

ISB2



Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH BOX 2 RATING			
SS-ISB2-63	63A	690V	4 pole	

DIE-CAST (Mirror Finish) BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH BOX 2 RATING			
M-ISB2-63	63A	690V	4 pole	

ISOLATION SWITCH PANEL MOUNT - ISP:

ISP



Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH PANEL MOUNT RATING			
SS-ISP-25	25A	690V	4 pole	
SS-ISP-40	40A	690V	4 pole	
SS-ISP-63	63A	690V	4 pole	

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH PANEL MOUNT RATING			
M-ISP-25	25A	690V	4 pole	
M-ISP-40	40A	690V	4 pole	
M-ISP-63	63A	690V	4 pole	

Sales Number	AUXILIARY SIGNAL CONTACT BLOCK		
AUX-ISP	1NC+1NO	AC-15	6A 230V/4A 415V)

IP69K CONTROL SWITCH - ISB-CB-M with IP69K Rating:

ISB-CB-M



Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH BOX WITH IP69K RATING			
SS-ISB-CB-22-M	2NC 2NO Contact Block	240V	3A max. M20	
SS-ISB-CB-31-M	3NC 1NO Contact Block	240V	3A max. M20	
SS-ISB-CB-40-M	4NC Contact Block	240V	3A max. M20	

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP				
Sales Number	ISOLATION SWITCH BOX WITH IP69K RATING			
M-ISB-CB-22-M	2NC 2NO Contact Block	240V	3A max. M20	
M-ISB-CB-31-M	3NC 1NO Contact Block	240V	3A max. M20	
M-ISB-CB-40-M	4NC Contact Block	240V	3A max. M20	



SKORPION Trapped Key Interlocking - ISOLATION

CONTROL SWITCH WITH SOLENOID RELEASE UNIT - ISB4-SR:

ISB4



Request Button version also available

The ISB4-SR is a trapped key operated control switch designed to turn off machine safety circuits.

The key is trapped when the main safety contacts are closed (machine able to run) and can only be released when the internal solenoid in the ISB4-SR is energised.

This then enables the key to be turned and released and the safety contacts opened. The key can then be used to release other devices in a trapped key system.

It can be used in conjunction with safety delay timers to allow a delay time before the solenoid is energised therefore allowing for any machine run down prior to releasing of the key.

Versions with integral request button are available.

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

Sales Number	Contact Block	Solenoid Voltage	Conduit Entry
SS-ISB4-SR-22	2NC 2NO (240V 3A max)	24V ac/dc	M20
SS-ISB4-SR-31	3NC 1NO (240V 3A max)	24V ac/dc	M20

DIE-CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	Contact Block	Solenoid Voltage	Conduit Entry
M-ISB4-SR-22	2NC 2NO (240V 3A max)	24V ac/dc	M20
M-ISB4-SR-31	3NC 1NO (240V 3A max)	24V ac/dc	M20

ISB4-SR MODELS WITH REQUEST BUTTON - NC/NO Changeover

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

Sales Number	Contact Block	Solenoid Voltage	Conduit Entry
SS-ISB4-SR-22-PB	2NC 2NO (240V 3A max)	24V ac/dc	M20
SS-ISB4-SR-31-PB	3NC 1NO (240V 3A max)	24V ac/dc	M20

DIE-CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	Contact Block	Solenoid Voltage	Conduit Entry
M-ISB4-SR-22-PB	2NC 2NO (240V 3A max)	24V ac/dc	M20
M-ISB4-SR-31-PB	3NC 1NO (240V 3A max)	24V ac/dc	M20

EXPLOSION PROOF CONTROL SWITCH - ISB-CB-EX (IECEx/ATEX Internal Switch):

ISB-CB-EX



- Exd IIC T6 (-20 ≤ Ta ≤ +60°C)
- Ex tb IIIC T85C (-20 ≤ Ta ≤ +60°C) Db



The Explosion Proof contact blocks conform to European harmonized standard EN60079-0 and EN60079-1 and can be used in European Zone 1, 2, 21, 22 environments. (Gas and Dust).

Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

Sales Number	ISOLATION SWITCH BOX WITH EXPLOSION PROOF CONTACT BLOCK
SS-ISB-CB-22-EX	2NC 2NO (pre-wired 3m cable) 250V 2.5A max.
SS-ISB-CB-11-EX	1NC 1NO (pre-wired 3m cable) 250V 4.0A max.
SS-ISB-CB-20-EX	2NC (pre-wired 3m cable) 250V 4.0A max.

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	ISOLATION SWITCH BOX WITH EXPLOSION PROOF CONTACT BLOCK
M-ISB-CB-22-EX	2NC 2NO (pre-wired 3m cable) 250V 2.5A max.
M-ISB-CB-11-EX	1NC 1NO (pre-wired 3m cable) 250V 4.0A max.
M-ISB-CB-20-EX	2NC (pre-wired 3m cable) 250V 4.0A max.

ISOLATION SWITCH WITH SOLENOID CONTROL (PANEL MOUNT) - ISP-SKR:

ISP-SKR



Fitted with RED/GREEN status lamps.

In addition to the 4 pole main isolator contacts, all models of the isolation switch ISP-SKR are supplied with:

RED lamp wired to indicate solenoid energized.

GREEN lamp for end user designation.

2NC 1NO monitoring contact block.

Solenoid energised to release key .

Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

Sales Number	ISOLATION SWITCH PANEL MOUNT SOLENOID KEY RELEASE		
	RATING		SOLENOID VOLTAGE
SS-ISP-SKR-25	25A	690V 4 pole	24V ac/dc
SS-ISP-SKR-40	40A	690V 4 pole	24V ac/dc
SS-ISP-SKR-63	63A	690V 4 pole	24V ac/dc

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	ISOLATION SWITCH PANEL MOUNT SOLENOID KEY RELEASE		
	RATING		SOLENOID VOLTAGE
M-ISP-SKR-25	25A	690V 4 pole	24V ac/dc
M-ISP-SKR-40	40A	690V 4 pole	24V ac/dc
M-ISP-SKR-63	63A	690V 4 pole	24V ac/dc



SKORPION Trapped Key Interlocking - ISOLATION

ISOLATION SWITCH WITH SOLENOID CONTROL (PANEL MOUNT) IP65 RATED- ISP-SKR-WR:

ISP-SKR-WR



Fitted with
RED/GREEN
status lamps.

Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

Sales Number	WATER RESISTANT ISOLATION SWITCH PANEL MOUNT SOLENOID KEY RELEASE			
	RATING			SOLENOID VOLTAGE
SS-ISP-SKR-WR-25	25A	690V	4 pole	24V ac/dc
SS-ISP-SKR-WR-40	40A	690V	4 pole	24V ac/dc
SS-ISP-SKR-WR-63	63A	690V	4 pole	24V ac/dc

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	WATER RESISTANT ISOLATION SWITCH PANEL MOUNT SOLENOID KEY RELEASE			
	RATING			SOLENOID VOLTAGE
M-ISP-SKR-WR-25	25A	690V	4 pole	24V ac/dc
M-ISP-SKR-WR-40	40A	690V	4 pole	24V ac/dc
M-ISP-SKR-WR-63	63A	690V	4 pole	24V ac/dc

ISOLATION SWITCH BOX WITH SOLENOID CONTROL IP65 RATED - ISB3-SKR:



Fitted with
RED/GREEN
status lamps. **ISB3-SKR-WR**

Power "ON" = Key TRAPPED. Power "OFF" = Key can be RELEASED

STAINLESS STEEL 316 BARREL HOUSING AND DUST CAP

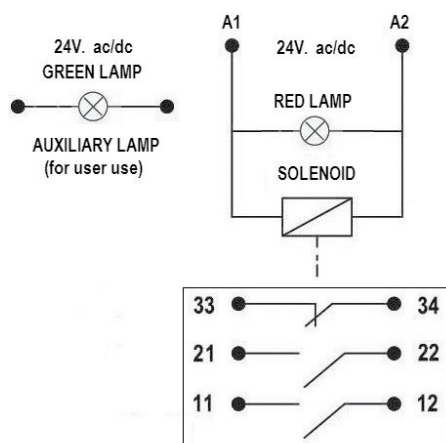
Sales Number	WATER RESISTANT ISOLATION SWITCH BOX SOLENOID KEY RELEASE			
	RATING			SOLENOID VOLTAGE
SS-ISB3-SKR-25	25A	690V	4 pole	24V ac/dc
SS-ISB3-SKR-40	40A	690V	4 pole	24V ac/dc
SS-ISB3-SKR-63	63A	690V	4 pole	24V ac/dc

DIE CAST (Mirror Finish) BARREL HOUSING AND DUST CAP

Sales Number	WATER RESISTANT ISOLATION SWITCH BOX SOLENOID KEY RELEASE			
	RATING			SOLENOID VOLTAGE
M-ISB3-SKR-25	25A	690V	4 pole	24V ac/dc
M-ISB3-SKR-40	40A	690V	4 pole	24V ac/dc
M-ISB3-SKR-63	63A	690V	4 pole	24V ac/dc

MONITORING CONTACT INFORMATION FOR SOLENOID CONTROL ISOLATION

Monitoring contacts:



MONITORING CONNECTION TERMINALS

Terminals	Description	RATING
A1 A2	Solenoid voltage 24V ac/dc	-
11 12	Closed when key is trapped and solenoid de-energized. Open when solenoid is energized – trapped open if key removed.	230V 3A
21 22	Closed when key is trapped and solenoid de-energized. Open when solenoid is energized – trapped open if key removed.	230V 3A
33 34	Open when solenoid is key is trapped. Closed when solenoid is energized – trapped open if key removed.	230V 3A
24V Auxiliary Lamp	3mm spade terminal - GREEN (not connected).	-

AUXILIARY SIGNAL CONTACT BLOCK: AUX-SP



Optional Auxiliary Signal Contact Block to indicate isolator status. Fits to all ISP-SKR and ISP isolation switch panel mount.

AUXILIARY CONTACT BLOCK

AUX-ISP	1NC+1NO	AC-15	6A 230V/4A 415V)
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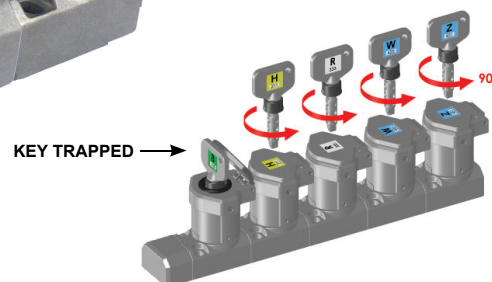
SKORPION Trapped Key Interlocking - KEY EXCHANGE

KEY EXCHANGE (1 Key Trapped and up to 9 Keys Released)

SS-KE-NS5



All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal



AVAILABLE WITH UP TO 5 KEYS
(First key trapped - 4 released)

Operating Principle

Viewing the image above the four keys in the key exchange block are trapped and cannot be removed until the first key in the system ("initial key") is put into the first position in the key exchange block.

The "initial key" which is usually in the power isolation part of the system is removed from the isolation box or panel and put in the first position in the key exchange block to allow access to the guarded areas when required.

Once the "initial key" has been placed in the first position of the key exchange block and turned then the other keys in the key exchange block can now be retracted and moved to the other parts of the system.

M-KE-NS4

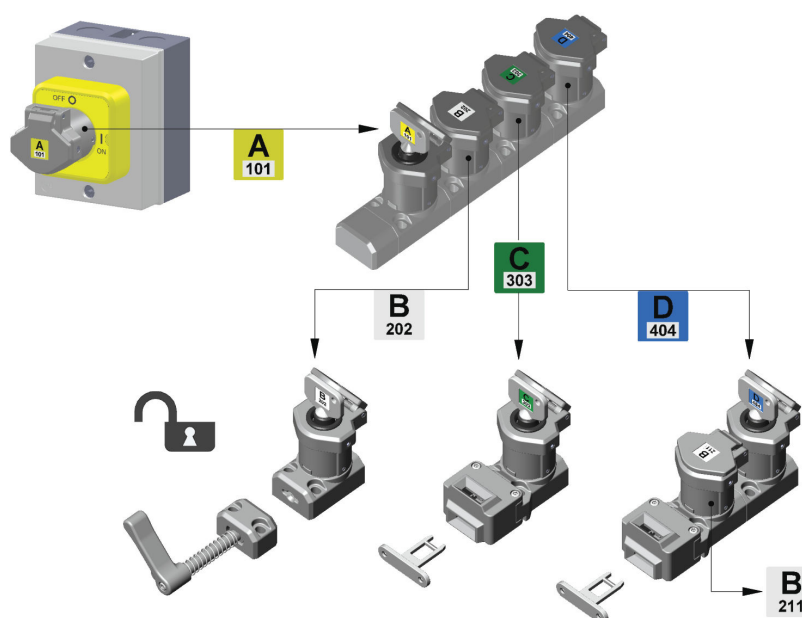


Die cast model M-KE-NS4 shown above with 3 keys trapped without initial key.

See schematic opposite showing system operation with first key inserted, allowing the three trapped keys to be released and move to other parts of the system.

Sales Number	KEY EXCHANGE - STAINLESS STEEL 316	
SS-KE-NS2	2 Key	First key TRAPPED All remaining keys can be released non-sequentially.
SS-KE-NS3	3 Key	
SS-KE-NS4	4 Key	
SS-KE-NS5	5 Key	

Sales Number	KEY EXCHANGE - DIE CAST METAL (Mirror Finish)	
M-KE-NS2	2 Key	First key TRAPPED All remaining keys can be released non-sequentially.
M-KE-NS3	3 Key	
M-KE-NS4	4 Key	
M-KE-NS5	5 Key	





SKORPION Trapped Key Interlocking - MX MULTI KEY EXCHANGE

MULTI KEY EXCHANGE SYSTEM (up to 5 keys trapped and up to 15 keys released)



Operating Principle

Viewing the picture above the fifteen keys in the bottom three rows keys of the MX Multi Key Exchange panel are trapped and cannot be removed until the five keys in the top row are put into position.

The "initial keys" which are usually in the power isolation parts of the system are removed from the isolation boxes or panels and put in the first row in the MX Multi Key Exchange panel to allow access to the guarded areas when required.

Once the "initial keys" have been placed in the first row of the MX Multi Key Exchange panel and turned then all the other keys in the panel can now be retracted (non-sequentially) and moved to the other parts of the system.

Due to the flexibility of the MX Multi Key Exchange System up to 15 keys can be released.

The MX Multi Key Exchange System is available in Stainless Steel or Die Cast metal either as a PANEL MOUNT or as a BOX MOUNT version and is available in three different sizes to accommodate various sizes of systems.

The end user has the option to configure and retrofit extra barrels to systems i.e. if the end user initially specifies a system with 4 keys trapped and 10 keys released this can be upgraded with the addition of extra barrels until the full 5 keys trapped and 15 keys released maximum is reached.

Panel Mount, Stainless Steel 20 Key
showing 5 keys trapped with 15 keys released



SS-MX-P-20-5x15

Box Mount, Stainless Steel 12 Key
showing 3 keys trapped 9 keys released



SS-MX-B-12-3x9

Box Mount, Stainless Steel 8 Key
showing 2 keys trapped 6 keys released

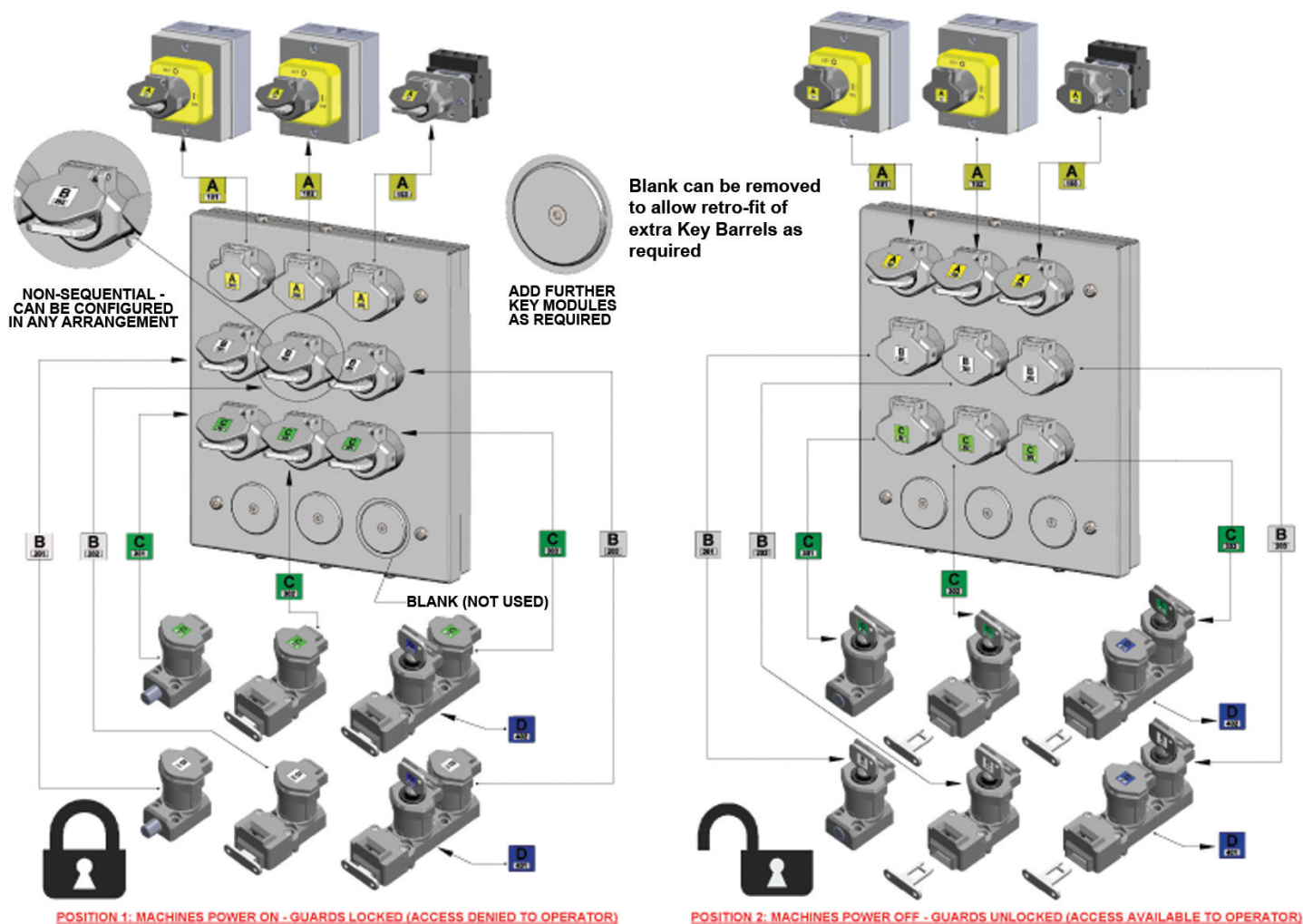


SS-MX-B-8-2x6



SKORPION Trapped Key Interlocking - HANDLE INTERLOCKS

MULTI KEY EXCHANGE SYSTEM 12 Key System Example with Blanks



MULTI KEY EXCHANGE SYSTEM ORDER EXAMPLE

MX Multiple Key Exchange System Ordering Example

For an initial Stainless Steel Box Mounted system of 2 keys trapped and 7 keys released the sales number would be: **SS-MX-B-12-2 X 7***.

This would have 1 blank on the first row and 2 blanks on row four (see image below). The blanks can be utilised later as your system grows.

*SS or M (Stainless Steel or Die Cast). MX - P or MX-B (Panel or Box). Total Keys 20, 12 or 8. 4x10 = No. of keys trapped x released.

Example: **SS-MX-B-12-2x7**

Multiple Key Exchange – Part number

□ - MX - □ - □ - □ x □

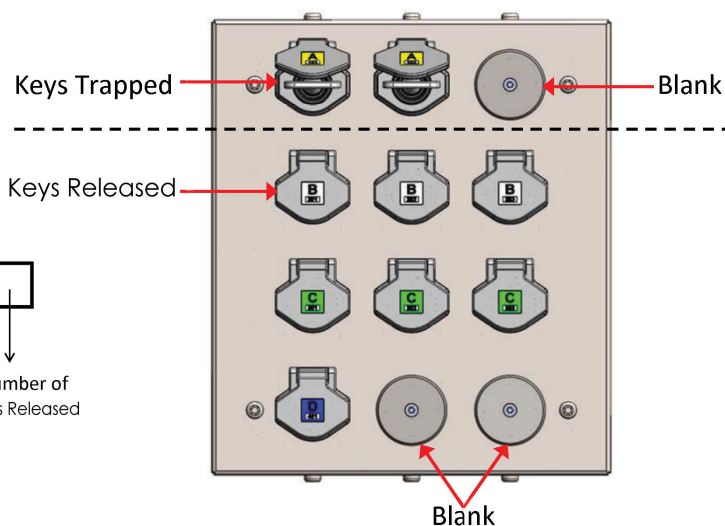
Stainless Steel: SS
Die Cast: M

(Panel Mount) P
(Box Mount) B

TYPE
20
12
8

Number of
Keys
Trapped

Number of
Keys
Released



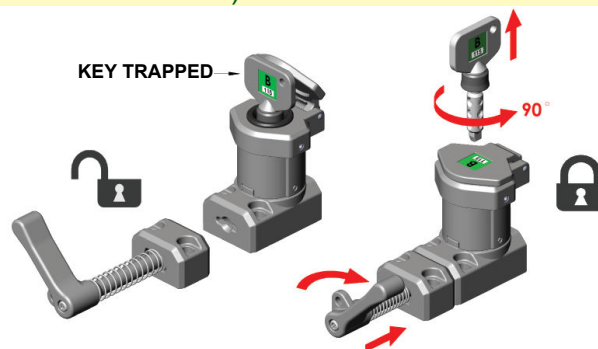


SKORPION Trapped Key Interlocking - HANDLE INTERLOCKS

HANDLE INTERLOCK (Single Key) with ACTUATOR (Chain Fixed to Handle)

SS-HS-C

All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal



Sales Number	HANDLE INTERLOCK WITH CHAIN SINGLE KEY STAINLESS STEEL 316
SS-HS-C	Key trapped - actuator unlocked (chain fixed to handle)
Sales Number	HANDLE INTERLOCK WITH CHAIN SINGLE KEY DIE CAST METAL (Mirror Finish)
M-HS-C	Key trapped - actuator unlocked (chain fixed to handle)

Operating Principle

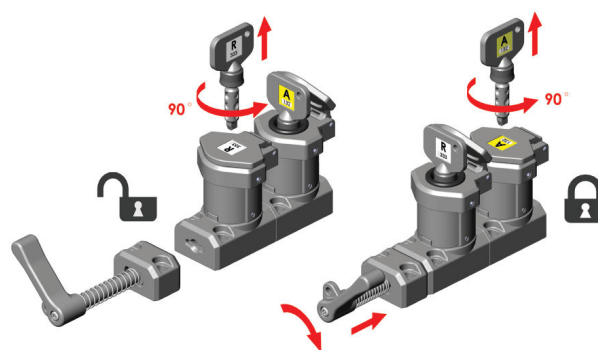
The Single Key Handle Interlock (Chain Fixed to Handle) is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted.

The key can then be turned which allows the actuator to be retracted thereby allowing access to the guarded area. Whilst the actuator is retracted the key cannot be removed and returned to either the key exchange block or the isolator.

Only when the key actuator is re-inserted into the handle interlock can the key be removed and returned to either the key exchange block or isolator and power restored to the application.

HANDLE INTERLOCK (Dual Key) with ACTUATOR (Chain Fixed to Handle)

SS-HD-C-11



Sales Number	HANDLE INTERLOCK WITH CHAIN DUAL KEY STAINLESS STEEL 316
SS-HD-C-11	2 sequential keys - one key trapped one key free - actuator unlocked (chain fixed to handle)
Sales Number	HANDLE INTERLOCK WITH CHAIN DUAL KEY DIE CAST METAL (Mirror Finish)
M-HD-C-11	2 sequential keys - one key trapped one key free - actuator unlocked (chain fixed to handle)

Operating Principle

The Dual Key Handle Interlock (Chain Fixed to Handle) is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted.

The key can then be turned which allows the actuator to be retracted, at the same time releasing the trapped key allowing access to the guarded area. The released key can then be taken by the operator into the guarded area (ideal for maintenance situations)

Whilst the second key is removed and the actuator is retracted the key cannot be removed and returned to either the key exchange block or the isolator. As long as the operator retains the key the guard lock cannot be operated.

Only when the key is returned and the actuator re-inserted into the handle interlock can the key be removed and returned to either the key exchange block or isolator and power restored to the application.

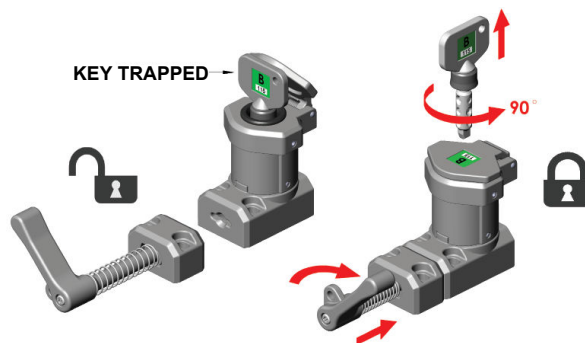


SKORPION Trapped Key Interlocking - HANDLE INTERLOCKS

HANDLE INTERLOCK (Single Key) with ACTUATOR (Spring Action Handle)

SS-HS

All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal



Sales Number	HANDLE INTERLOCK SINGLE KEY STAINLESS STEEL 316
SS-HS	Key trapped - actuator unlocked (spring action handle)
Sales Number	HANDLE INTERLOCK SINGLE KEY DIE CAST METAL (Mirror Finish)
M-HS	Key trapped - actuator unlocked (spring action handle)

Operating Principle

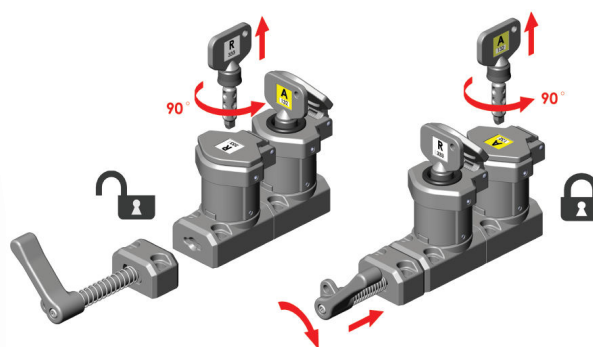
The Single Key Handle Interlock (Spring Action Handle) is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted.

The key can then be turned which allows the actuator to be retracted thereby allowing access to the guarded area. Whilst the actuator is retracted the key cannot be removed and returned to either the key exchange block or the isolator.

Only when the key actuator is re-inserted into the handle interlock can the key be removed and returned to either the key exchange block or isolator and power restored to the application.

HANDLE INTERLOCK (Dual Key) with ACTUATOR (Spring Action Handle)

SS-HD-11



Sales Number	HANDLE INTERLOCK DUAL KEY STAINLESS STEEL 316
SS-HD-11	2 sequential keys - one key trapped one key free - actuator unlocked (spring action handle)
Sales Number	HANDLE INTERLOCK DUAL KEY DIE CAST METAL (Mirror Finish)
M-HD-11	2 sequential keys - one key trapped one key free - actuator unlocked (spring action handle)

Operating Principle

The Dual Key Handle Interlock (Spring Action Handle) is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted.

The key can then be turned which allows the actuator to be retracted, at the same time releasing the trapped key allowing access to the guarded area. The released key can then be taken by the operator into the guarded area (ideal for maintenance situations)

Whilst the second key is removed and the actuator is retracted the key cannot be removed and returned to either the key exchange block or the isolator. As long as the operator retains the key the guard lock cannot be operated.

Only when the key is returned and the actuator re-inserted into the handle interlock can the key be removed and returned to either the key exchange block or isolator and power restored to the application.



SKORPION Trapped Key Interlocking with Key Exchange

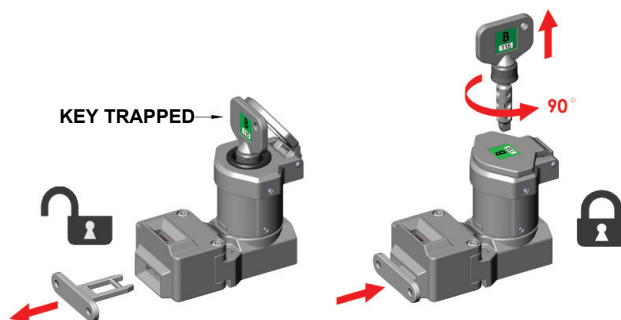
TONGUE INTERLOCK (Single Key)

SS-TS



*See below for Actuator options.

All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal



Sales Number	TONGUE INTERLOCK SINGLE KEY STAINLESS STEEL 316 Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
SS-TS	Key trapped - actuator unlocked
Sales Number	TONGUE INTERLOCK SINGLE KEY DIE CAST METAL (Mirror Finish) Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
M-TS	Key trapped - actuator unlocked

Operating Principle

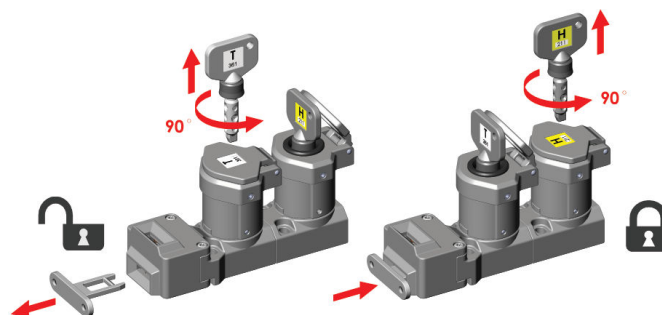
The Single Key Tongue Interlock is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted. The key can then be turned which allows the bolt to be retracted. Whilst retracted the key cannot be removed and returned to key exchange block or the isolator.

TONGUE INTERLOCK (Dual Key)

SS-TD-11



*See below for Actuator options.



Sales Number	TONGUE INTERLOCK DUAL KEY STAINLESS STEEL 316 Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
SS-TD-11	2 sequential keys - one key trapped one key free - actuator unlocked
Sales Number	TONGUE INTERLOCK DUAL KEY DIE CAST METAL (Mirror Finish) Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
M-TD-11	2 sequential keys - one key trapped one key free - actuator unlocked

Operating Principle

The Dual Key Tongue Interlock is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted.

The key can then be turned which allows the actuator to be retracted, at the same time releasing the trapped key allowing access to the guarded area. The released key can then be taken by the operator into the guarded area (ideal for maintenance situations)

Whilst the second key is removed and the actuator is retracted the key cannot be removed and returned to either the key exchange block or the isolator. As long as the operator retains the key the guard lock cannot be operated.

Only when the key is returned and the actuator re-inserted into the tongue interlock can the key be removed and returned to either the key exchange block or isolator and power restored to the application.

ACTUATORS FOR TONGUE INTERLOCK SWITCHES SELECTION CHART:



SALES NUMBER	ACTUATOR TYPE
140107	A = Standard Actuator Stainless Steel 316
140108	F = Flat Actuator Stainless Steel 316 with Plastic Cover
140110	HF = Heavy Duty Flexible Actuator Stainless Steel 316 and Die Cast
140111	HFH = Heavy Duty Flexible Actuator fully Stainless Steel 316



SKORPION Trapped Key Interlocking - BOLT INTERLOCKS

BOLT INTERLOCKS (not suitable for guard access)

SS-BS



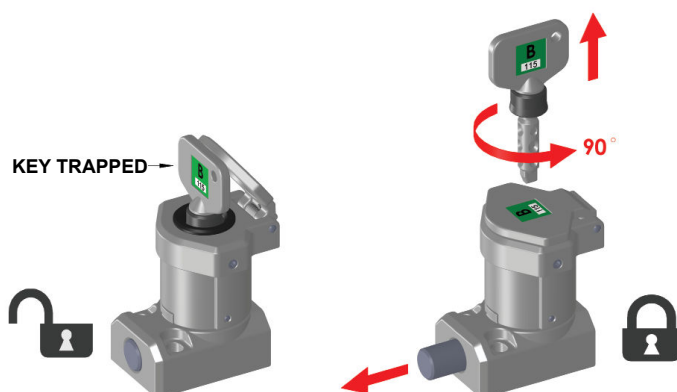
All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal

Operating Principle

The Single Key Bolt Interlock is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted. The key can then be turned which allows the bolt to be retracted. Whilst retracted the key cannot be removed and returned to key exchange block or the isolator.

Sales Number	BOLT INTERLOCK SINGLE KEY STAINLESS STEEL 316
SS-BS	Key trapped - bolt retracted

Sales Number	BOLT INTERLOCK SINGLE KEY DIE CAST METAL (Mirror Finish)
M-BS	Key trapped - bolt retracted



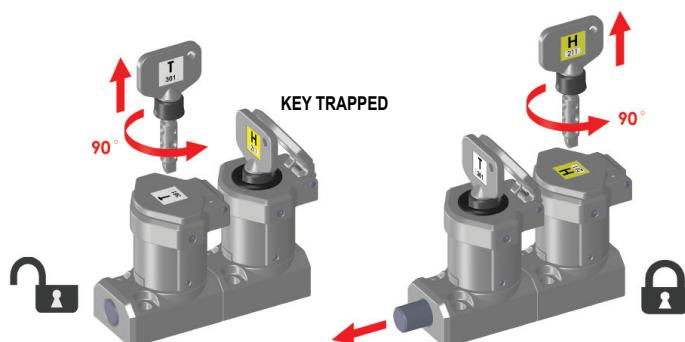
SS-BD-11



Operating Principle

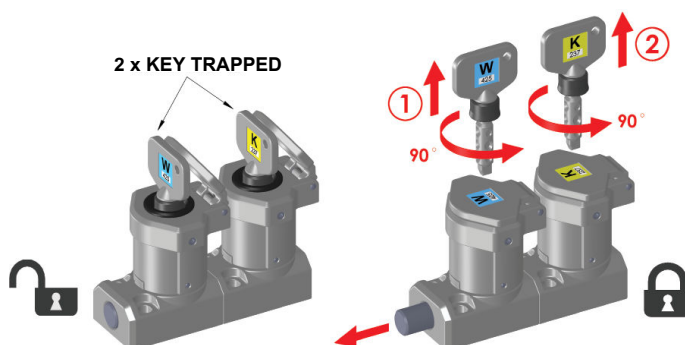
The Dual Key Bolt Interlock is used as a part of the system as a guard lock and can only be operated when a key from either the isolator or a key exchange block is inserted in the first key barrel. Inserting the key into the first barrel allows the bolt to be retracted and at the same allows the second key to be removed. The second key can then be taken by the operator into the guarded area for his protection.

As long as the second key is removed the key in the first barrel is trapped and cannot be removed. Only when the second key is returned can the first key be removed and returned to the key exchange block or isolator.



Sales Number	BOLT INTERLOCK DUAL KEY STAINLESS STEEL 316
SS-BD-11	2 keys - 1 key trapped 1 key free - bolt retracted

Sales Number	BOLT INTERLOCK DUAL KEY DIE CAST METAL (Mirror Finish)
M-BD-11	2 keys - 1 key trapped 1 key free - bolt retracted



Sales Number	BOLT INTERLOCK DUAL KEY STAINLESS STEEL 316
SS-BD-20	2 keys trapped - bolt retracted

Sales Number	BOLT INTERLOCK DUAL KEY DIE CAST METAL (Mirror Finish)
M-BD-20	2 keys trapped - bolt retracted



SKORPION Trapped Key Interlocking with Key Exchange

INTERLOCKING WITH CONTROL ISOLATION

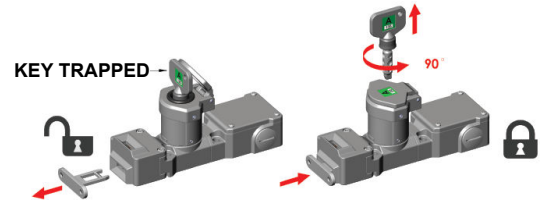
SS-TS-CB

All available in
Stainless Steel
316 or
Mirror Polished
Die Cast Metal

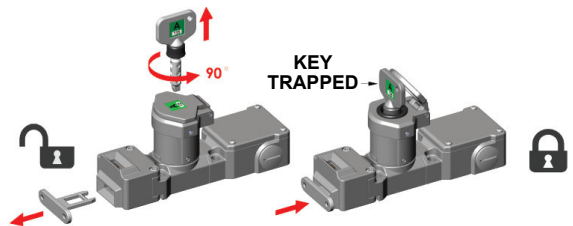


**See opposite page for Actuator options.*

Holding Force (ISO14119) F1 Max 3000N Fzh 2307N



STAINLESS STEEL Sales Number	DIE CAST METAL Sales Number	TONGUE INTERLOCK SINGLE KEY WITH CONTACT BLOCK STAINLESS STEEL 316 Key Trapped - Actuator Unlocked - NC safety Contacts Open
SS-TS-CB-22-N	M-TS-CB-22-N	Single Tongue Interlock with 2NC 2NO Contact Block - 1/2" NPT
SS-TS-CB-31-N	M-TS-CB-31-N	Single Tongue Interlock with 3NC 1NO Contact Block - 1/2" NPT
SS-TS-CB-22-M	M-TS-CB-22-M	Single Tongue Interlock with 2NC 2NO Contact Block - M20
SS-TS-CB-31-M	M-TS-CB-31-M	Single Tongue Interlock with 3NC 1NO Contact Block - M20



STAINLESS STEEL Sales Number	DIE CAST METAL Sales Number	TONGUE INTERLOCK SINGLE KEY WITH CONTACT BLOCK STAINLESS STEEL 316 Key Free - Actuator Unlocked - NC Safety Contacts Open
SS-TSR-CB-22-N	M-TSR-CB-22-N	Single Tongue Interlock with 2NC 2NO Contact Block - 1/2" NPT
SS-TSR-CB-31-N	M-TSR-CB-31-N	Single Tongue Interlock with 3NC 1NO Contact Block - 1/2" NPT
SS-TSR-CB-22-M	M-TSR-CB-22-M	Single Tongue Interlock with 2NC 2NO Contact Block - M20
SS-TSR-CB-31-M	M-TSR-CB-31-M	Single Tongue Interlock with 3NC 1NO Contact Block - M20

EXPLOSION PROOF INTERLOCKING WITH CONTROL ISOLATION

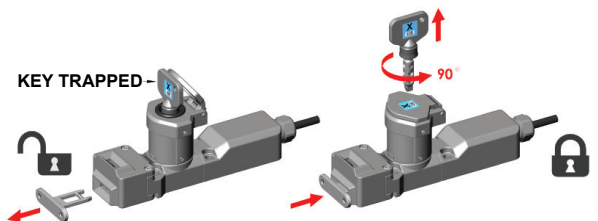
SS-TS-CB EX

Exd IIC T6 (-20 ≤ Ta ≤ +60C)

Ex tb IIIC T85C (-20 ≤ Ta ≤ +60C) Db



**See opposite page for Actuator options.*



Trapped Key with ATEX EExd IIC T6 certified explosion proof contact blocks.

The explosion proof contact blocks conform to European harmonized standard EN60079-0 and EN60079-1 and can be used in European Zone 1, 2, 21, 22 environments. (Gas and Dust).

Designed for use in oil, petro-chemical, pharmaceutical, food processing and packaging applications where the potential for explosive atmospheres are present.

Sales Number	TONGUE INTERLOCK SINGLE KEY WITH EXPLOSION PROOF CONTACT BLOCK STAINLESS STEEL 316 Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
SS-TS-CB-22-EX	Single Tongue Interlock with 2NC 2NO Pre-wired EX Block
SS-TS-CB-11-EX	Single Tongue Interlock with 1NC 1NO Pre-wired EX Block

Sales Number	TONGUE INTERLOCK SINGLE KEY WITH EXPLOSION PROOF CONTACT BLOCK DIE CAST (Mirror Finish) Holding Force (ISO14119) F1 Max 3000N Fzh 2307N
M-TS-CB-22-EX	Single Tongue Interlock with 2NC 2NO Pre-wired EX Block
M-TS-CB-11-EX	Single Tongue Interlock with 1NC 1NO Pre-wired EX Block



SKORPION Trapped Key Interlocking with Key Exchange

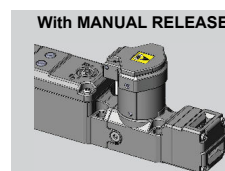
TONGUE INTERLOCK with SOLENOID RELEASE (Single Key) with ACTUATOR

SS-TS-SR

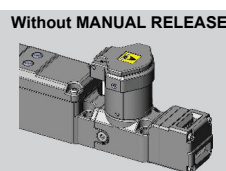
*See below for Actuator options.



KEY TRAPPED



With MANUAL RELEASE



Without MANUAL RELEASE

STAINLESS STEEL MODEL	CONTACT BLOCK	CONDUIT ENTRY	SALES NUMBER	SALES NUMBER
SS-TS-SR	2NC 2NO	M20	815001	815301
SS-TS-SR	3NC 1NO	M20	815002	815302

DIE-CAST METAL MODEL	CONTACT BLOCK	CONDUIT ENTRY	SALES NUMBER	SALES NUMBER
M-TS-SR	2NC 2NO	M20	820001	820301
M-TS-SR	3NC 1NO	M20	820002	820302

PUSH BUTTON & ILLUMINATED STOP (Fitted to Lid)

Momentary Request Push Button 1 x Changeover Contact Common Closed/Open - Add PB to Sales Number
 2NC Illuminated Red E-Stop (twist to reset, mushroom head, plug in spade terminals) - Add ES to Sales Number
 Momentary Request Push Button and Illuminated Red E-Stop - Add PB-ES to Sales Number

SPECIFICATIONS

Supply/Solenoid Voltage	24V ac/dc
Holding Force	F1 max. 3000N FzH 2307N
Enclosure Protection	IP67
Operating Temperature	-25C to +40C
Conduit Exit	M20
Fixing	4 x M6

SS-TS-SR shown with Push Button and Illuminated Emergency Stop Button.

Operating Principle

The TS-SR is a trapped key operated tongue interlock switch designed to hold closed machine guards.

When the actuator tongue is inserted into the switch (guard closed) the key can be rotated and trapped and the main safety contacts are closed (machine able to run).

The actuator tongue can only be released when the internal solenoid in the TS-SR is energised. This then enables the key to be turned and released, the safety contacts opened and the actuator tongue removed.

The key can then be used to release other devices in a trapped key system.

It can be used in conjunction with safety delay timers to allow a delay time before the solenoid is energised therefore allowing for machine run down time prior to releasing of the key and actuator tongue.

ACTUATORS FOR TONGUE INTERLOCK SWITCHES SELECTION CHART:



SALES NUMBER	ACTUATOR TYPE
140107	A = Standard Actuator Stainless Steel 316
140108	F = Flat Actuator Stainless Steel 316 with Plastic Cover
140110	HF = Heavy Duty Flexible Actuator Stainless Steel 316 and Die Cast
140111	HFH = Heavy Duty Flexible Actuator fully Stainless Steel 316

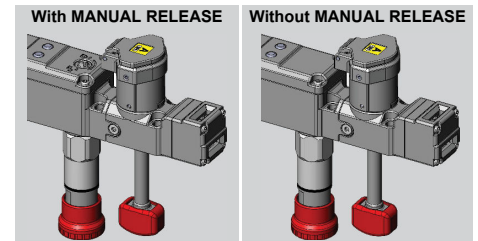
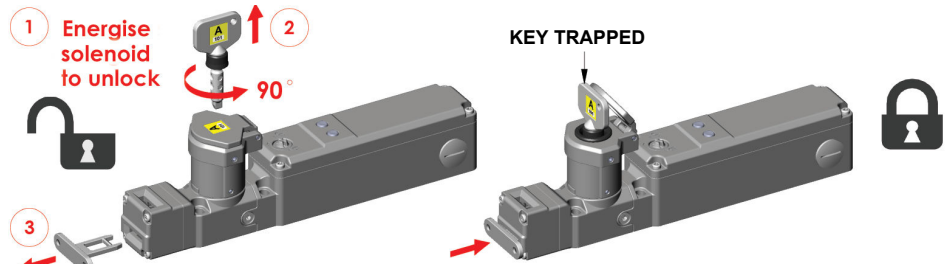
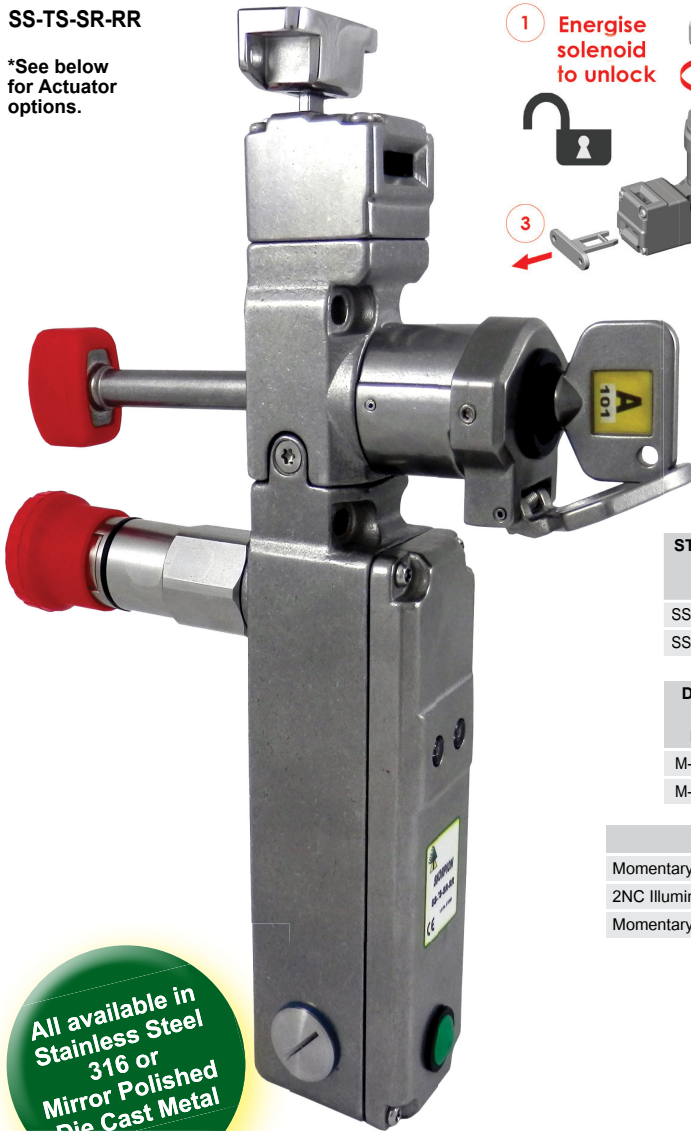


SKORPION Trapped Key Interlocking with Key Exchange

TONGUE INTERLOCK with SOLENOID RELEASE (Single Key) with REAR RELEASE ESCAPE

SS-TS-SR-RR

*See below for Actuator options.



STAINLESS STEEL MODEL	CONTACT BLOCK	CONDUIT ENTRY	SALES NUMBER	SALES NUMBER
SS-TS-SR-RR	2NC 2NO	M20	815051	815351
SS-TS-SR-RR	3NC 1NO	M20	815052	815352

DIE CAST METAL MODEL	CONTACT BLOCK	CONDUIT ENTRY	SALES NUMBER	SALES NUMBER
M-TS-SR-RR	2NC 2NO	M20	820051	820351
M-TS-SR-RR	3NC 1NO	M20	820052	820352

PUSH BUTTON & ILLUMINATED STOP (Fitted to Lid)

Momentary Request Push Button 1 x Changeover Contact Common Closed/Open - Add PB to Sales Number
2NC Illuminated Red E-Stop (twist to reset, mushroom head, plug in spade terminals) - Add ES to Sales Number
Momentary Request Push Button and Illuminated Red E-Stop - Add PB-ES to Sales Number

SPECIFICATIONS	
Supply/Solenoid Voltage	24V ac/dc
Holding Force	F1 max. 3000N FzH 2307N
Enclosure Protection	IP67
Operating Temperature	-25C to +40C
Conduit Exit	M20
Fixing	4 x M6

Operating Principle

The TS-SR-RR is the same as the TS-SR apart from it provides a manual means of escape from inside the guarded area. The red button and red knob can be used to release the lock and key simultaneously.

The red button and red knob are fitted to protrude through the guard frame to enable access to the switch from inside the hazardous area.

When the actuator tongue is inserted into the switch (guard closed) the key can be rotated and trapped and the main safety contacts are closed (machine able to run).

The actuator tongue can only be released when the internal solenoid in the TS-SR-RR is energised. This then enables the key to be turned and released, the safety contacts opened and the actuator tongue removed.

The key can then be used to release other devices in a trapped key system.

It can be used in conjunction with safety delay timers to allow a delay time before the solenoid is energised therefore allowing for machine run down time prior to releasing of the key and actuator tongue.

ACTUATORS FOR TONGUE INTERLOCK SWITCHES SELECTION CHART:



SALES NUMBER	ACTUATOR TYPE
140107	A = Standard Actuator Stainless Steel 316
140108	F = Flat Actuator Stainless Steel 316 with Plastic Cover
140110	HF = Heavy Duty Flexible Actuator Stainless Steel 316 and Die Cast
140111	HFH = Heavy Duty Flexible Actuator fully Stainless Steel 316



SKORPION Trapped Key Interlocking with Key Exchange

GATE BOLT SLIDING ACTUATORS for use with TS-SR Range

Operating Principle

GB-SR-SS Gate Bolt Sliding Actuators can be used with all models of TS-SR switches.

They interlock the guard but ensure unintentional re-start is prevented because a deliberate action of sliding and then re-latching of the Gate Bolt handle is required.

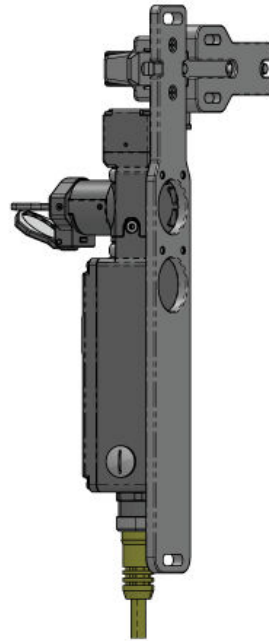
They provide a simple means of fixing to the moving and fixed parts of the guard and come fitted with Handle and Flat Actuator.

Whether opening the guard normally from the front (by using the handle) or by initiating the optional rear release escape from inside the hazardous area the handle needs to be re-latched before the machine can be re-started.

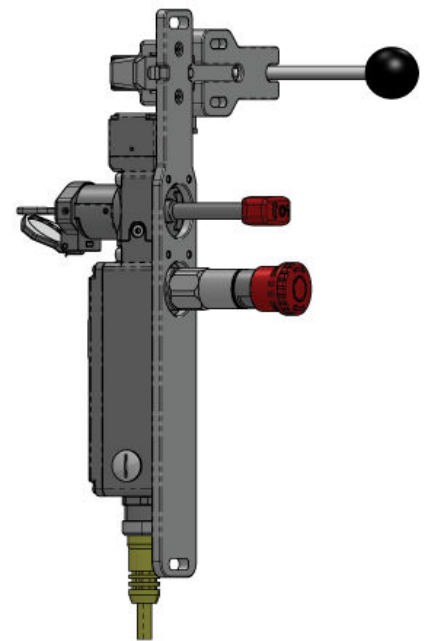
They provide shearing forces up to 5,000N on large hinged doors and are easy to install on hinged or sliding guards.

No need for extra brackets or door handles and they are not susceptible to misalignment damage.

Operators are required to manually close the guard and padlock holes are provided for maintenance operations.



Type: GB-SR-SS
Shown fitted with TS-SR
Solenoid Locking Tongue Switch



Type: GB-SR-SS
Shown fitted with TS-SR-RR
Solenoid Locking Tongue Switch
with optional extra Rear Handle

SALES NUMBER	GATE BOLT WITH SLIDING ACTUATOR SUITABLE FOR: SS-TS-SR and SS-TS-SR-RR
815201	Gate Bolt GB-SR-SS Handle slides from Left Hand Side
815202	Gate Bolt GB-SR-SS Handle slides from Right Hand Side
211005	Rear Handle - Stainless Steel
211006	Spring Loaded Catch - Stainless Steel

SALES NUMBER	GATE BOLT WITH SLIDING ACTUATOR SUITABLE FOR: M-TS-SR and M-TS-SR-RR
820201	Gate Bolt GB-SR-M Handle slides from Left Hand Side
820202	Gate Bolt GB-SR-M Handle slides from Right Hand Side
211005	Rear Handle - Stainless Steel
211006	Spring Loaded Catch - Stainless Steel

MINI VALVE LOCK

Available in two versions with choice of four thread sizes.



Operating Principle

IDEM's mini valve locks can be used standalone or for use as part of a SKORPION Trapped Key solution.

They can be locked in an open or closed state (passing or non-passing). The key can then be removed and can be moved to safe storage to avoid tampering) or can be integrated with trapped key guard interlocks to protect operators from machine, gas or air hazards.



SKORPION Trapped Key Interlocking with Key Exchange

MINI VALVE INTERLOCK

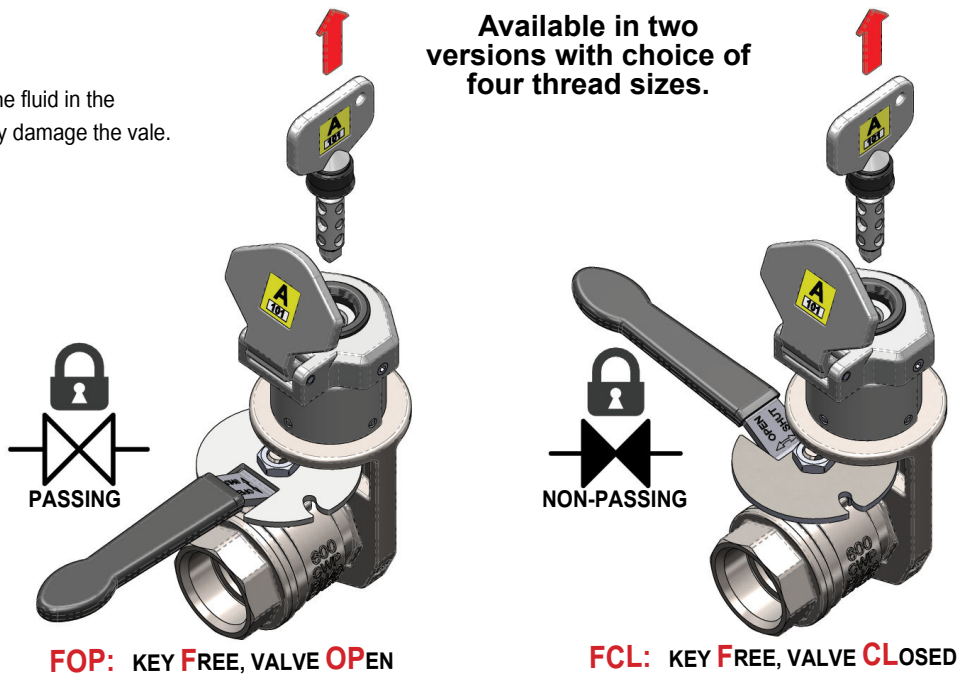
Benefits

- Option when key free of passing or non-passing (open or closed valve).
- Eliminates the need for electrical wiring.
- Available in Stainless Steel 316 housing or die cast metal housing.
- Suitable for CIP and SIP cleaning processes and can be high pressure hosed with detergents at high temperatures.
- Virtually maintenance free - apart from scheduled inspection checks.
- Four thread sizes (BSP) to cover most popular options.
- Compact designed for ease of mounting.
- Until the key is returned to its original position within the mini valve lock, there is no way to enable the machinery to be re-started.
- Can easily be integrated with trapped key interlocks as part of a SKORPION Trapped Key system.

Working Temperature and Pressure Limits

- 40 Bar (600 psi)
- - 40C to +170C

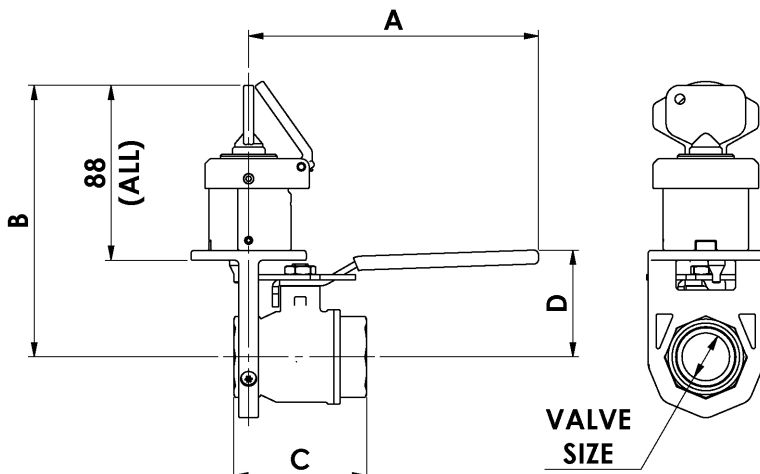
Warning: Freezing of the fluid in the installation may severely damage the valve.



Available in sizes: 1/4", 3/8", 1/2" and 1" BSP thread fittings.

SALES NUMBER	FLOW	STAINLESS STEEL MINI VALVE LOCK DESCRIPTION
SS-MV-FCL-1/4	Non-Passing	Stainless Steel Mini Valve Lock 1/4" BSSP FCL
SS-MV-FCL-3/8	Non-Passing	Stainless Steel Mini Valve Lock 3/8" BSSP FCL
SS-MV-FCL-1/2	Non-Passing	Stainless Steel Mini Valve Lock 1/2" BSSP FCL
SS-MV-FCL-1	Non-Passing	Stainless Steel Mini Valve Lock 1" BSSP FCL
SS-MV-FOP-1/4	Passing	Stainless Steel Mini Valve Lock 1/4" BSSP FOP
SS-MV-FOP-3/8	Passing	Stainless Steel Mini Valve Lock 3/8" BSSP FOP
SS-MV-FOP-1/2	Passing	Stainless Steel Mini Valve Lock 1/2" BSSP FOP
SS-MV-FOP-1	Passing	Stainless Steel Mini Valve Lock 1" BSSP FOP

SALES NUMBER	FLOW	DIE CAST METAL MINI VALVE LOCK DESCRIPTION
M-MV-FCL-1/4	Non-Passing	Die Cast Metal Mini Valve Lock 1/4" BSSP FCL
M-MV-FCL-3/8	Non-Passing	Die Cast Metal Mini Valve Lock 3/8" BSSP FCL
M-MV-FCL-1/2	Non-Passing	Die Cast Metal Mini Valve Lock 1/2" BSSP FCL
M-MV-FCL-1	Non-Passing	Die Cast Metal Mini Valve Lock 1" BSSP FCL
M-MV-FOP-1/4	Passing	Die Cast Metal Mini Valve Lock 1/4" BSSP FOP
M-MV-FOP-3/8	Passing	Die Cast Metal Mini Valve Lock 3/8" BSSP FOP
M-MV-FOP-1/2	Passing	Die Cast Metal Mini Valve Lock 1/2" BSSP FOP
M-MV-FOP-1	Passing	Die Cast Metal Mini Valve Lock 1" BSSP FOP



PART NUMBER	A (mm)	B (mm)	C (mm)	VALVE SIZE (BSP)
MV-FCL-1/4	96	125	39	0.25 INCH
MV-FOP-1/4	96	125	39	0.25 INCH
MV-FCL-3/8	96	125	39	0.375 INCH
MV-FOP-3/8	96	125	39	0.375 INCH
MV-FCL-1/2	118	129	50	0.5 INCH
MV-FOP-1/2	118	129	50	0.5 INCH
MV-FCL-1	146	137	67	1 INCH
MV-FOP-1	146	137	67	1 INCH



SKORPION Trapped Key Interlocking with Key Exchange

KEY SELECTION:

IDEM offer two types of key for the Skorpion Trapped Key System both available with any coding from the KEY CODE variants.

To assist in the process of ordering we offer a range of 48 KEY CODES which are shown in the table below (other KEY CODES (any letter and three digits, i.e. M873) are available to the customer upon request).

Standard Key: SK keys can be used throughout the system and all Sales Numbers start with SK- followed by a letter and then three digits i.e. SK-C406.

EJECTOR KEY: EK ejector keys can be used where a secondary function requires an operator to enter and carry the key into a hazardous area.



The key when turned on removal is ejected at the point where it is able to be retracted, providing a prompt for the operator to retain the key on his person.

The spring eject feature is built into the key and not the barrel, therefore they can be ordered like any other key code and fitted to the appropriately coded key barrel in the trapped key range.

Note: Different KEY FOB colours are available dependent upon the code chosen. This is a customer option to provide the end-user with an easily seen visual aid e.g. the First Key (Primary Key) could be chosen in a different colour to the colour chosen for the Released Keys - therefore easily distinguishing the Primary Key from the other keys in the system.

Please see Order Form TK1 below or available by contacting IDEM at sales@idemsafety.com.

KEY CODE SELECTION:

STANDARD KEY (SK)	KEY FOB COLOUR	YELLOW Key Fob	WHITE Key Fob
		A	B
	Key Code	A101	B201
		A102	B202
		A103	B203
		A104	B204
		A105	B205
		A106	B206
		A107	B207
		A108	B208
		A109	B209
		A110	B210
		A111	B211
		A112	B212
EJECTOR KEY (EK)	KEY FOB COLOUR	GREEN Key Fob	BLUE Key Fob
		C	D
	Key Code	C301	D401
		C302	D402
		C303	D403
		C304	D404
		C305	D405
		C306	D406
		C307	D407
		C308	D408
		C309	D409
		C310	D410
		C311	D411
		C312	D412

SKORPION TRAPPED KEY ORDER FORM/TEMPLATE - TK1 (for Example 2)

ORDER	ITEM 1	ITEM 2	ITEM 3	ITEM 4	ITEM 5
Part Number					
	CODE	CODE	CODE	CODE	CODE
Key Fob Code					
Key Status					

ACTUATOR TYPES

	140107 (A Standard)	140108 (F Flat)	140110 (HF Flexible)	140111 (HFH S/Steel Flexible)
Quantity				



- EXPLOSION PROOF SAFETY SWITCHES
- TONGUE OPERATED INTERLOCK SWITCHES
- CODED NON-CONTACT SAFETY SWITCHES
- MAGNETIC NON-CONTACT SAFETY SWITCHES
- BELT ALIGNMENT SWITCHES FOR CONVEYORS
- ROPE PULL SAFETY SWITCHES
- STANDARD EMERGENCY STOP SWITCHES
- SAFETY LIMIT SWITCHES
- RFID NON-CONTACT SAFETY SWITCHES
- RFID SOLENOID LOCKING SAFETY SWITCHES
- STANDALONE SAFETY SWITCHES
- SAFETY MONITORING RELAYS
- SAFETY LIGHT CURTAINS
- IP69K STAINLESS STEEL SWITCHES
- HEAVY DUTY EMERGENCY STOP SWITCHES
- TRAPPED KEY EXCHANGE SYSTEMS

IDEM are proud to be the UK's largest machine safety switch manufacturer and manufacturer of the world's largest range of Stainless Steel 316 machine safety switches.



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