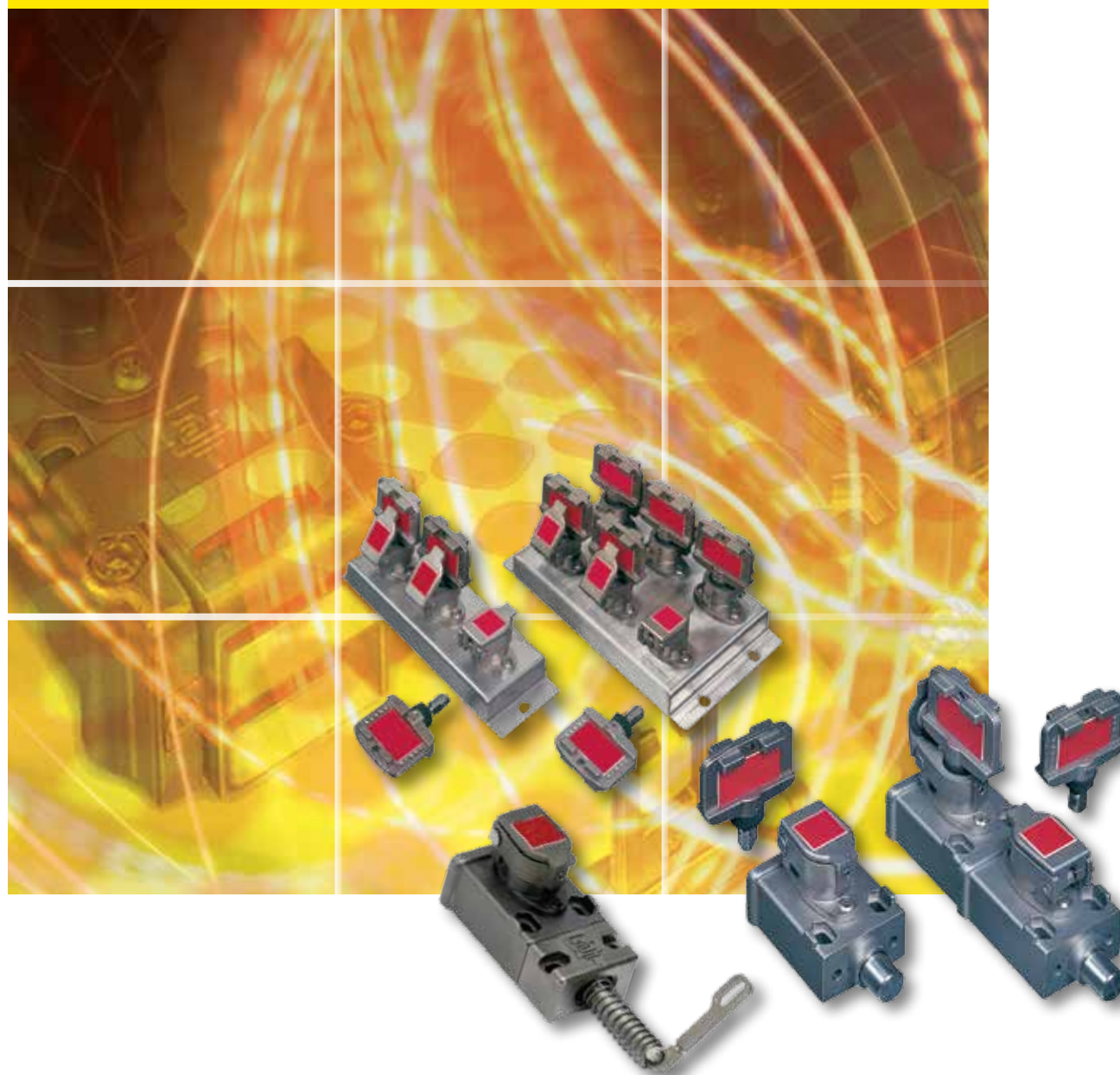


PROSAFE TRAPPED KEY SYSTEMS

Easy Selection Guide

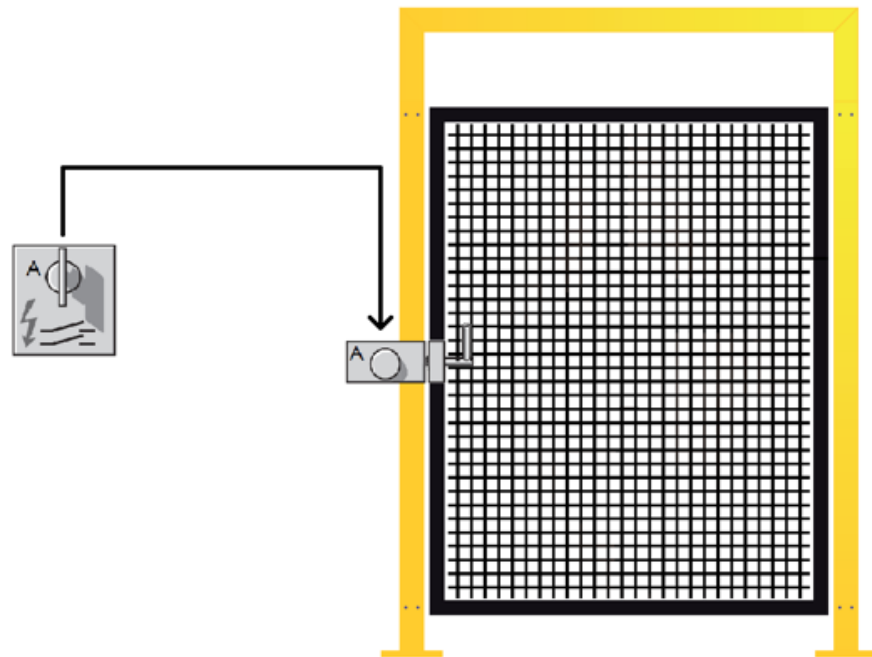
SAFETY PRODUCTS



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Introduction

Trapped key interlocking systems are based upon the premise that one key cannot be in two places at the same time. These systems can be configured to ensure that a predetermined sequence of events takes place or that hazards have been reduced before operators can become exposed to them.

They are mechanical systems, which makes them suitable for applications where the location of the plant, environment or explosive atmospheres make the use of electrical interlocking systems unsuitable or expensive to install. Unique key coding allows for a high degree of security and tamper-resistance.

step 1

Ordering can be done in these easy steps:

STEP 1: Select the isolating units / start devices

These are the devices that isolate power to the hazard. Once the power is isolated, the trapped key can then be removed and used in a key exchange unit or an access device. Isolating units are not supplied with keys included.



step 2

STEP 2: Select a key exchange unit / middle device

This is required if more than one isolating unit or access device is being used. The key from the isolating unit is placed into the vacant barrel of the exchange unit. This key is referred to as the primary key. This allows the trapped keys, known as secondary keys, to be removed from the unit. The secondary keys can then be used in access devices.



step 3

STEP 3: Select the access devices / end devices

These are the devices that allow access to the hazard. They can be single key or dual key units. Single key units contain only a primary key, which is not included with the unit. Dual key units contain a primary key (not included) and a secondary key (included). When the primary key is inserted into a dual key access device, the secondary key which is released functions as a personnel key which an operator takes with them into the hazardous area. The primary key remains trapped until the personnel key is replaced by the operator. This prevents the access device from being locked and power being restored to the hazard while an operator is in the area.



step 4

STEP 4: Add any trapped keys that are required

Check that these keys are not already included with another product in the system. (e.g. a key exchange unit).



step 5

STEP 5: Add the required key codes for each item

Refer to the preferred key code list below

- For one access device and one isolating unit:
The code for the access device will be the same as the code for the isolating unit
- For multiple access devices:
 - The primary codes (keys in) of the key exchange will be the same as the codes for the isolating unit
 - The secondary codes (keys out) of the key exchange will have different codes to the keys in
 - The codes for the access devices will match up with the secondary codes of the key exchange

Preferred key codes

These codes are readily available and will typically result in the quickest delivery. For other available codes, please contact NHP.

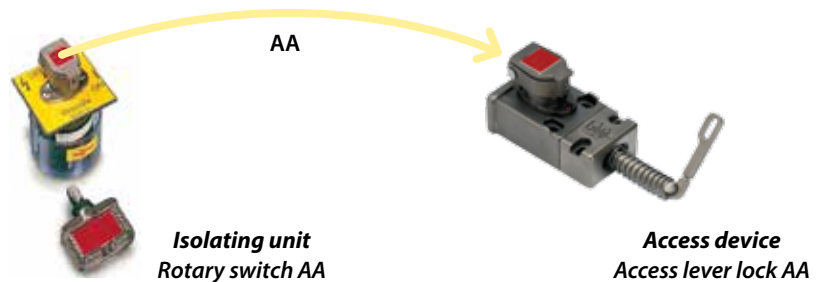
AA	AB	AC	AD	AE	AF	AG
BA	BB	BC	BD	BE	BF	BG
CA	CB	CC	CD	CE	CF	CG
DA	DB	DC	DD	DE	DF	DG
EA	EB	EC	ED	EE	EF	EG
FA	FB	FC	FD	FE	FF	FG
GA	GB	GC	GD	GE	GF	GG

Example system: one access device

The rotary switch disconnects power to the machine.

The key is released from the switch and can be used to open a hatch on the machine.

Description	Base Cat. No.	Required key codes	Complete Cat. No.	Qty
Panel mounted rotary switch, 2NO/2NC, 20 A	440T-MRPSE11	AA	440T-MRPSE11AA	1
Trapped key	440T-AKEYE10	AA	440T-AKEYE10AA	1
Single key access lock, lever actuator	440T-MSALE10	AA	440T-MSALE10AA	1



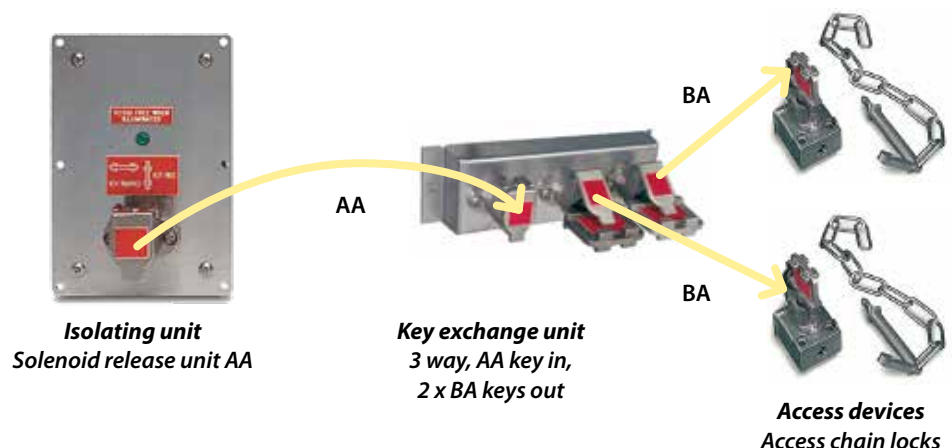
Example system: two access devices

The solenoid release unit is energised upon receiving a signal from a PLC.

The key from the solenoid goes into a 3-way key exchange unit, releasing the two trapped keys.

These can then be used to open access gates.

Description	Base Cat. No.	Required Key Codes	Complete Cat. No.	Qty
Solenoid release unit 24 V DC	440T-MSRUE11	AA	440T-MSRUE11AA	1
Trapped key	440T-AKEYE10	AA	440T-AKEYE10AA	1
3-way key exchange unit	440T-MKEXE11	AA, BA, BA	440T-MKEXE11AABABA	1
Single key access lock, chain actuator	440T-MSCLE10	BA	440T-MSCLE10BA	2

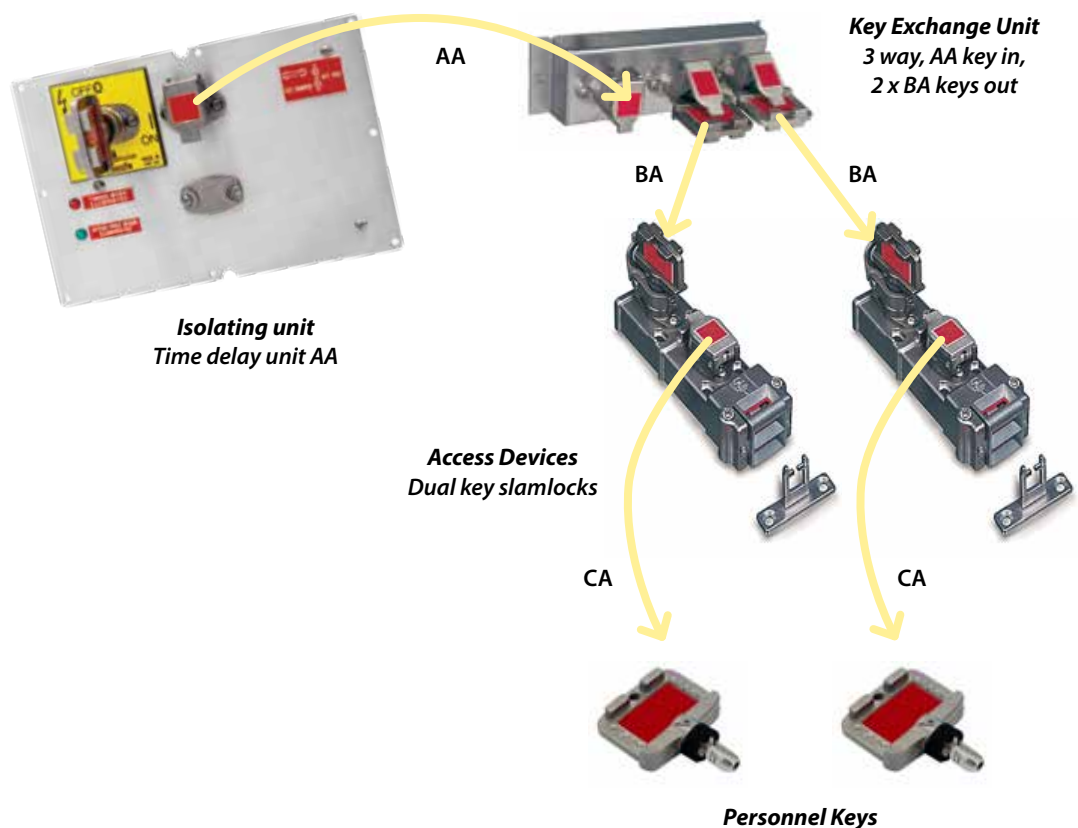


Example system: two access devices with personnel keys

Power to the machine is switched off using the timed isolator unit. The timer begins timing to allow the machine to slow down to a safe state. After the time delay, the key is released. This then goes into the key exchange to release the keys to the two access devices.

When a key is inserted into an access device, the gate can be opened and a secondary personnel key is released. The operator takes this key with them when they enter the gated area. The removal of the personnel key traps the primary key in the access device, which prevents the operator from being locked inside the gated area and the machine being restarted.

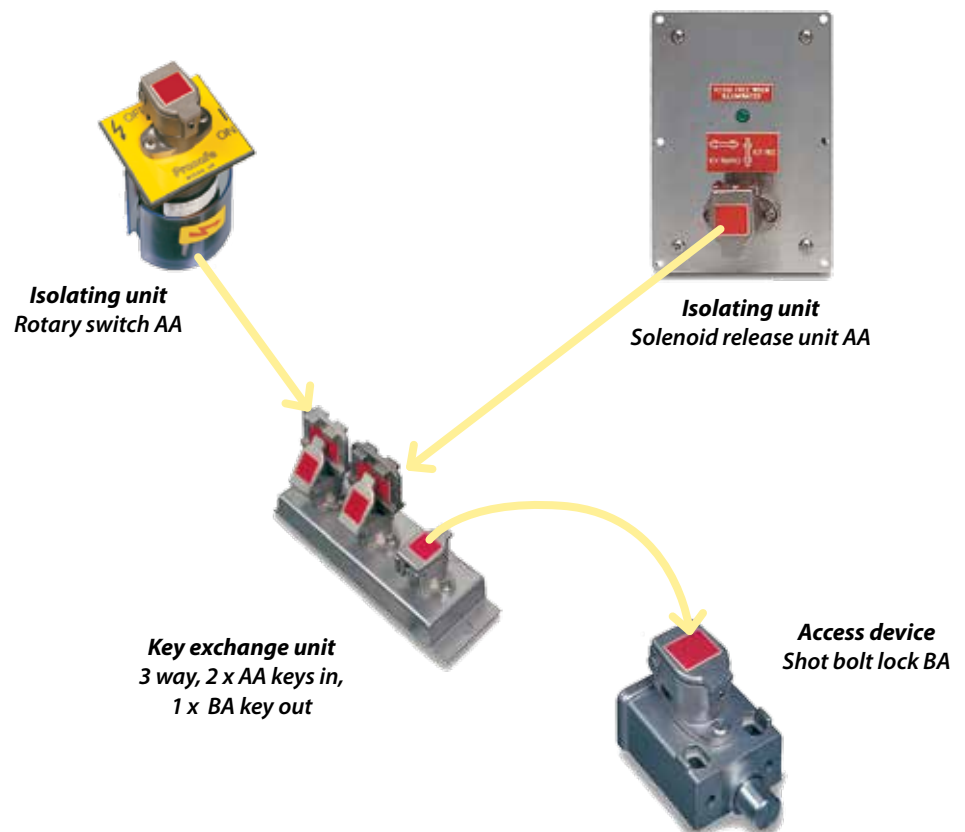
Description	Base Cat. No.	Required Key Codes	Complete Cat. No.	Qty
Electronic time delay unit 24 V DC 2NO/1NC	440T-MSTUE11	AA	440T-MSTUE11AA	1
Trapped key	440T-AKEYE10	AA	440T-AKEYE10AA	1
3-way key exchange unit	440T-MKEXE11	AA, BA, BA	440T-MKEXE11AABABA	1
Dual key slamlock	440T-MDSLE10	BA, CA	440T-MDSLE10BACA	2



Example system: two isolating units and one access device

The rotary switch disconnects power to one part of the machine. A PLC signals that the second part of the machine is now in safe state, driving the solenoid release unit. The two keys from the isolating units are now free to be inserted to the key exchange unit, releasing one key. This can then be used to retract the shot bolt and operate a control handle.

Description	Base Cat. No.	Required key codes	Complete Cat. No.	Qty
Solenoid release unit 24 V DC	440T-MSRUE11	AA	440T-MSRUE11AA	1
Panel mounted rotary switch, 2NO/2NC, 20 A	440T-MRPSE11	AA	440T-MRPSE11AA	1
3-way key exchange unit	440T-MKEXE11	BA, AA, AA	440T-MKEXE11BAAAAA	1
Trapped key	440T-AKEYE10	BA	440T-AKEYE10BA	1
Single key shot bolt	440T-MSBLE10	BA	440T-MSBLE10BA	2



product selection

1. Isolating units



Rotary switches

Rotary switches are electrical isolators which directly remove power to the hazard.

Applications:

- Disconnecting power to a device

Description	Base Cat. No.	Required key codes	Qty
Enclosed (IP65), 2NO/2NC, 20 A	440T-MRKSE11 (Key not supplied)	Primary code <input type="text"/>	
Panel mounted, 2NO/2NC, 20 A	440T-MRPSE11 (Key not supplied)	Primary code <input type="text"/>	



Solenoid release units

Solenoid release units will release a trapped key upon receiving an external electrical signal indicating that the hazard has been isolated.

Applications:

- Integrating auxilliary feedback from another field device into the trapped key system
- Releasing a key based on a control signal from a PLC

Description	Base Cat. No.	Required key codes	Qty
24V DC, 2NO/2NC, 20 A	440T-MSRUE11 (Key not supplied)	Primary code <input type="text"/>	
230V AC, 2NO/2NC, 20 A	440T-MSRUE33* (Key not supplied)	Primary code <input type="text"/>	



Electronic time delay units

Time delay units include an electrical isolator and a timing unit. Once the isolator has been switched off, the timer counts down the specified time before releasing the trapped keys.

Application:

- High-inertia machines with some run-down time

Description	Base Cat. No.	Required key codes	Qty
Single key 24 V DC, 2NO/1NC, 20 A	440T-MSTUE11* (Key not supplied)	Primary code <input type="text"/>	
Dual key 24 V DC, 2NO/1NC, 20 A	440T-MDTUE11* (Key not supplied)	Dual primary codes <input type="text"/> <input type="text"/>	

Notes: Items marked with an asterisk (*) are not stocked.

2. Key exchange units

Primary keys must be inserted and trapped before secondary keys may be released.
 Primary keys will remain trapped until all secondary keys are returned to the exchange unit.

Applications:

- Multiple isolating devices
- Multiple access devices



Description	Base Cat. No.	Required key codes	Qty
2 way: 1 key in, 1 key out	440T-MKEXE10 (Primary key not supplied, Secondary Key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	
3 way: 1 key in, 2 keys out	440T-MKEXE11 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/>	
4 way: 1 key in, 3 keys out	440T-MKEXE12 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/>	
4 way: 2 keys in, 2 keys out	440T-MKEXE15* (Primary key not supplied, Secondary key supplied)	Primary codes <input type="text"/> <input type="text"/> Secondary codes <input type="text"/> <input type="text"/>	
5 way: 1 key in, 4 keys out	440T-MKEXE13 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
6 way: 1 key in, 5 keys out	440T-MKEXE14 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
7 way: 1 key in, 6 keys out	440T-MKEXE19 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
8 way: 1 key in, 7 keys out	440T-MKEXE20 (Primary key not supplied, Secondary Key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	
9 way: 1 key in, 8 keys out	440T-MKEXE22 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary codes <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	

Notes: Items marked with an asterisk (*) are not stocked.

3. Access devices

Access locks



Access locks are used to prevent access to a door, gate or hinged guard.

Applications:

- Lever actuators – standard sliding and hinged guards
- Chain actuators – poorly aligned sliding and hinged guards
- Dual key option – full body access gates. The second key is a personnel key which the operator takes with them inside the hazardous area to prevent accidental lock-in

Description	Base Cat. No.	Required key codes	Qty
Single key, key trapped to release actuator, lever actuator	440T-MSALE10 (Key not supplied)	Primary code <input type="text"/>	
Single key, key trapped to release actuator, chain actuator	440T-MSCLE10 (Key not supplied)	Primary code <input type="text"/>	
Dual key, primary key trapped and secondary key free to release actuator, lever actuator	440T-MDALE10 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	
Dual key, primary key trapped and secondary key free to release actuator, chain actuator	440T-MDCLE10 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	



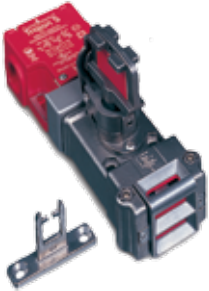
Slamlock mechanical

Mechanical slamlocks feature a tongue actuator similar to a standard safety interlock switch.

Applications:

- Standard hinged and sliding doors
- Dual key option – full body access gates. The second key is a personnel key which the operator takes with them inside the hazardous area to prevent accidental lock-in

Description	Base Cat. No.	Required key codes	Qty
Single key, key trapped to release actuator	440T-MSSLE10 (Key not supplied)	Primary code <input type="text"/>	
Dual key, primary key trapped and secondary key free to release actuator	440T-MDSLE10 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	



3. Access devices

Slamlock electrical

Electrical slamlocks feature a tongue actuator similar to a standard safety interlock switch. They also include safety and auxiliary output electrical contacts.

Applications:

- Standard hinged and sliding doors
- Combining an electrical safety interlock switch with a trapped key locking system
- Dual key option – full body access gates. The second key is a personnel key which the operator takes with them inside the hazardous area to prevent accidental lock-in

Description	Base Cat. No.	Required key codes	Qty
Single key, key trapped to release actuator, 2NC/1NO	440T-MSSSE10 (Key not supplied)	Primary code <input type="text"/>	
Dual key, primary key trapped and secondary key free to release actuator, 2NC/1NO	440T-MDSSE10* (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	



Bolt interlocks

Bolt interlocks are used to interlock an operator handle or control element of a switching device as the extended bolt blocks operator movement.

Bolt interlocks should not be used on hinged doors or guards as it is possible to extend the bolt and remove the trapped key without actually closing the door, therefore bypassing the safety system.

Applications

- Switchgear interlocking

Description	Base Cat. No.	Required key codes	Qty
Single key, key trapped to retract bolt	440T-MSBLE10 (Key not supplied)	Primary code <input type="text"/>	
Dual key, primary key trapped and secondary key free to retract bolt	440T-MDBLE14 (Primary key not supplied, Secondary key supplied)	Primary code <input type="text"/> Secondary code <input type="text"/>	

Notes: Items marked with an asterisk (*) are not stocked.

4. Accessories

Description	Base Cat. No.	Required key codes	Qty
Trapped key	440T-AKEYE10	Primary code <input type="text"/>	
Spare weatherproof dust cap	440T-ASFC10	Primary code <input type="text"/>	
Emergency repair kit ER1	440T-AKIT45ER1	N/A	

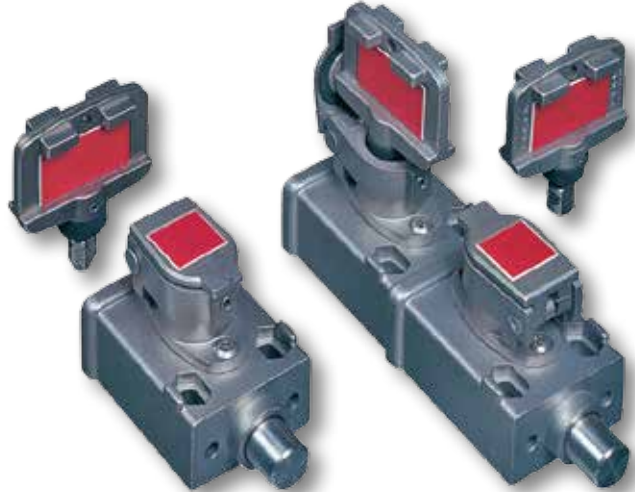
Prosafe Builder

ProSafe Builder by Rockwell Automation is an easy-to-use software configuration tool that helps you build trapped key safety systems.

- Flow diagram layout for easy visualisation
- Key codes are added for you, ensuring no double up
- Automatically generate bill of materials straight into ProposalWorks, including any required keys



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Prosafe builder is part of the ProposalWorks Proposal Builder software from Rockwell Automation.

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