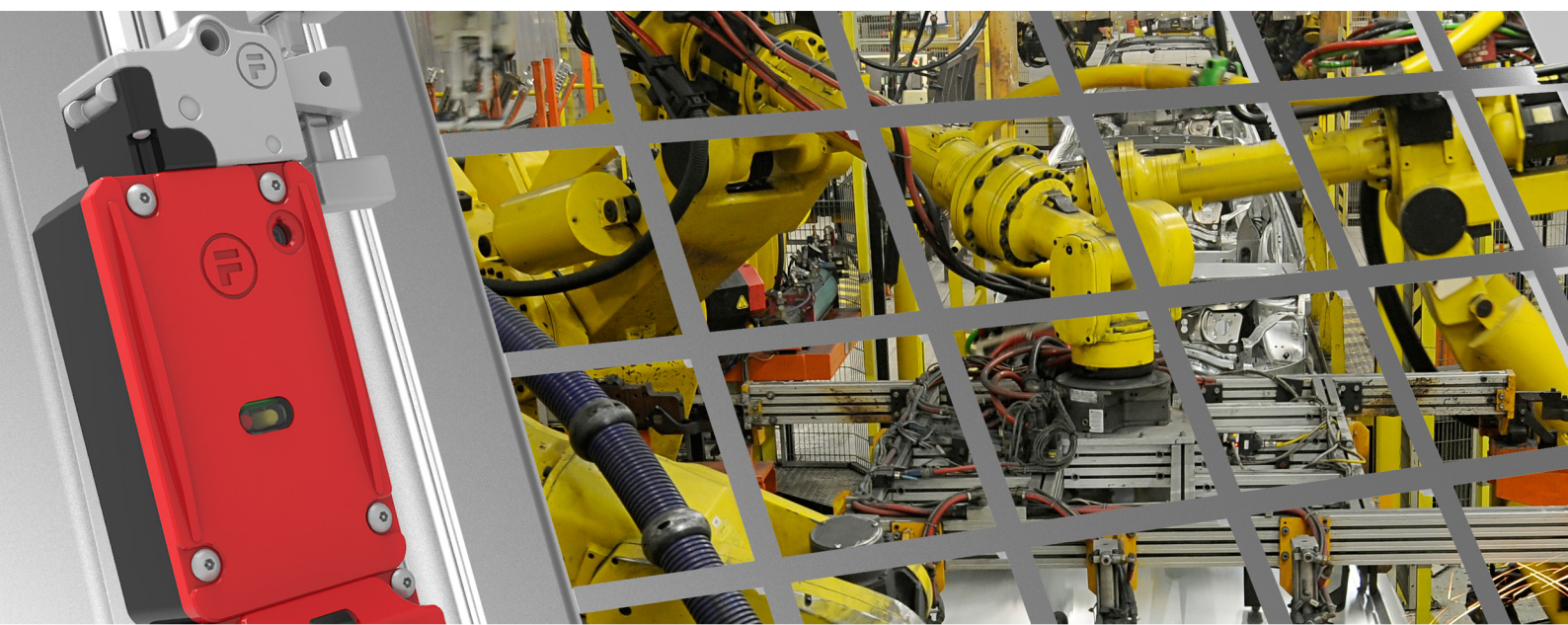


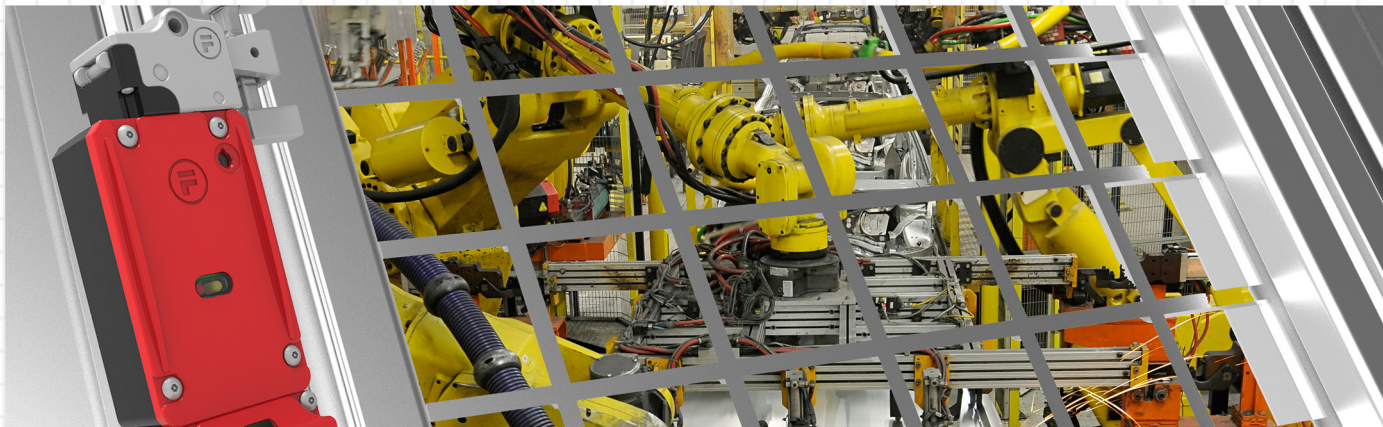
Protecting People, Industry and Productivity



Modular Gate Switches for
Safeguarding Hazardous Machinery

Index

am Gard
pro “The interlock of choice”



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F Fortress
Interlocks

Protecting People
Protecting Industry
Protecting Productivity

The “Company”

“Who we are and What we do”

Fortress Interlocks helps customers protect their personnel and capital assets. The company has over 40 years of experience in the safety market, designing and manufacturing safety access and control systems based at its headquarters in Wolverhampton, UK. These systems create safe workplaces where employees in industrial environments are safeguarded from injury and equipment is protected from damage. A world leader in access control systems, Fortress products guarantee that actions and events are undertaken in a pre-determined sequence ensuring a safe working environment.

The company's products are suitable for applications across a wide industrial base including power generation and distribution, steel, automotive, recycling, building materials, food and beverage, robotics and palletisers. Its extensive product offering and interlocking experience allows Fortress to provide unique solutions for all safeguarding applications. It regularly creates bespoke solutions, often by customising its standard products.

Gard *pro*

amGardpro is the ultimate range of modular safety gate switch interlocks for heavy duty applications.

Its unique modular construction allows easy configuration and provides total electro-mechanical solutions for practically any safeguarding application up to SIL3 (EN/IEC 60261) Category 4 and PLe (EN/ISO 13849-1).



Gard

mGard is the premier range of modular robust trapped key interlocks for heavy duty applications. Trapped key interlocking is a tried and tested method of mechanically safeguarding dangerous machines and hazardous processes, and is suitable for use up to SIL 3 (EN/IEC 62061), Category 4 and PLe (EN/ISO 13849-1).

It is called "Trapped Key" as it works by releasing and trapping keys in a predetermined sequence. After the control or power has been isolated, a key is released that can be used to grant access to individual or multiple doors.



The “Company”

tGard

tGard offers total integration of control and safety. This is Fortress’ brand new product that is customisable as standard.

Its unique design allows the configuration of safety interlock switches, trapped key interlocks and machine control stations or any configuration of all three.

tGard elements are housed in a metal body to create a simple and robust safety system.



am Gard S40

amGardS40 is a range of safety interlock switches, manufactured in 316 stainless steel. The range is modular in design, allowing a wide range of safety interlock switches to be configured to suit many industrial applications, including:

- Solenoid Locking Safety Switches
- Non Solenoid Tongue Switches, all with or without machine control

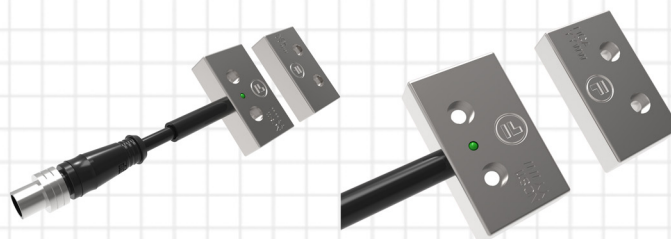
The range is supplied in enclosures sealed to IP69K making it suitable to be pressure washed at high temperatures and has a retention force of 10,000N (greatest on the market) so it is ideal for ensuring guard doors are held closed until machines and/or processes are in a safe condition.



am Gard nct

amGardnct is a range of safety switches that utilise non contact technology.

Designed with IP69K housings, these robust, coded, non contact, safety proximity switches are long lasting and virtually maintenance free with a high level of misalignment making them ideal for guarding applications across a range of industries.



The “Concept”

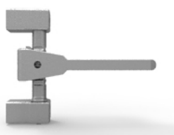
amGard_{pro} is the ultimate range of modular safety gate switch interlocks, for heavy duty applications. Its unique modular construction allows easy configuration and provides total electro-mechanical solutions for practically any safeguarding application up to SIL3 (EN/IEC 62061), Category 4 and PLe (EN/ISO 13849-1).

With its unrivalled design concept, amGard_{pro} offers a range of fully integrated safety interlocks, including solenoid and non-solenoid safety switches complete with a host of additional options including key control modules, emergency release, redundant sensors, lock out/tag out and push buttons, e-stops and indication lights for enhanced functionality. The robust construction of this range makes it ideal for use in a wide range of industrial applications when safety, strength and reliability are of paramount importance.

The **amGard_{pro}** system replaces all adaptations normally fitted within a guarding system, such that additional hardware like door catches, actuators, closing mechanisms, internal mechanisms, key functions including authorised access and deadlocks may be no longer needed. All of these separate functions can be incorporated into amGard_{pro} configurations, resulting in the most flexible safety interlock solution available for today's industrial environment.



Actuators



Actuators

Handle Actuators
Tongue Actuator
All in One Head and Handle Actuator
Slidebars

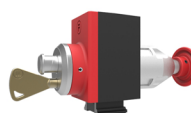
Head Modules



Head Modules

Handle Actuator Head Module
Tongue Actuator Head Module
All in One Head and Handle Unit
Padlock Adaptor
Foot (to terminate mechanical lock)

Adaptors



Adaptors

Safety Key Adaptors
Access Key Adaptors
Extracted Key Adaptors
Internal Release Adaptors

Electrical Switching / Locking



Electrical Switching / Locking

Safety Switch Bodies
Solenoid Controlled Lock Bodies
Extended body Solenoid Controlled Lock Bodies
Explosion Proof Switch Bodies
Foot (to terminate mechanical lock)



AS-interface versions available
European, Canadian and North American approvals

Option PODs



Option PODs

Key Switch Option Pod
Indicator Lamp Option Pod
Pushbutton Option Pod



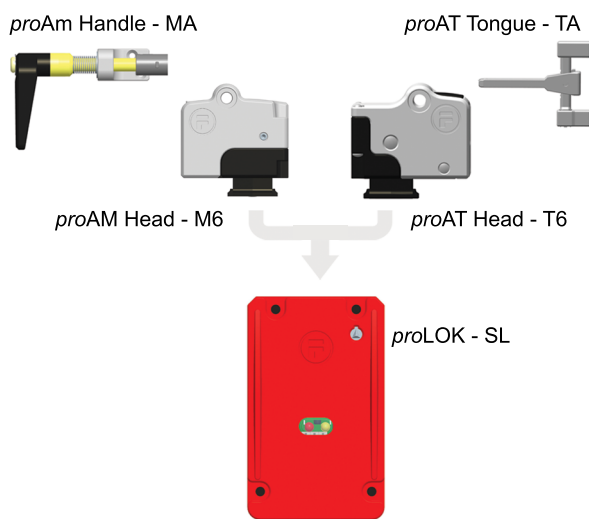
AS-interface versions available
European, Canadian and North American approvals

The “Concept”

Gard_{pro} Technical Specifications

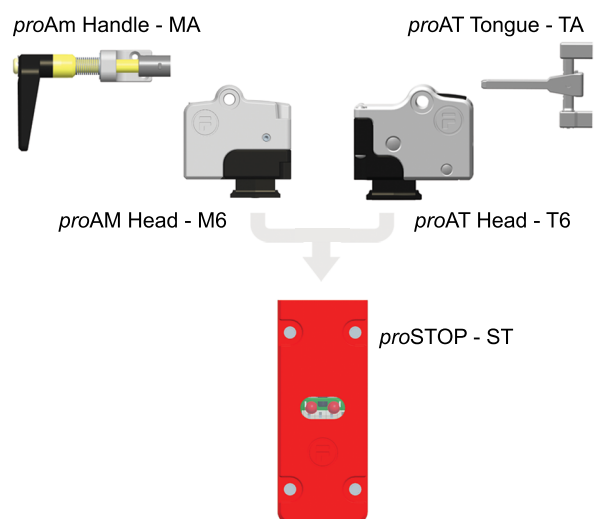
MA2M6SL411 & TA4T6SL411

The solenoid controlled safety switch body (*proLOK*) can be equipped with two different head types, creating door/hatch lock configurations that restrict access to the safeguarded area until it is safe to enter.



MA2M6ST401 & TA4T6ST401

The safety switch body (*proSTOP*) can be equipped with two different head types. There's configurations select machine stop and detect the position of doors/hatches that give access to the safeguarded area or machine.



amGardpro Technical Specification

Housing Materials	Zinc Alloy to BSEN12844 & Stainless Steel
Paint Finishes	Glass powder coat on passivated base material
Ingress Protection	IP67
Mechanical Life	>1,000,000 Switching Cycles
Performance Level	PLe
B10d	5,000,000
Ambient Temperature	-5°C to +40°C / 60°C
Switches Conformance	DIN VDE 0060 Part 206 & IEC 947-5-1
Maximum Frequency of Ops	7,200 per hour
Connector Type	Spring Activated Vibration Proof Block

Switching Specifications

Switching Principal	Positive Break (safety circuits)
Switch Circuit Current	3A
Minimum Switch Current	1mA at 5 VDC
Maximum Switching Voltage	230V AC Max
Utilisation Category	AC 15 or DC13
Switching Contact Element	4NC/2NO (<i>proLOK</i>), 2NC/1NO (<i>proSTOP</i>)
Control Voltage	24V AC/DC, 110V AC or 230V AC
Insulating Resistance	20M Ohm
Insulating Voltage	2500V AC
Solenoid Power Rating	12W (current at Nominal 24V DC = 500mA. Quasient current = 350mA)
Solenoid Rating (Duty Cycle)	100%
Solenoid Voltage	24V AC/DC, 110V AC and 230V AC
Solenoid Voltage Tolerance	90% to 110% of nominal
Cable Size	26 - 14 AWG

“Compliance”

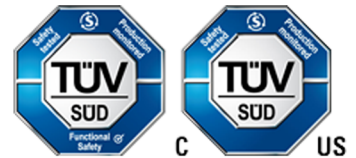
“The interlock of choice”

EU machinery safety standards are regarded as the most stringent in the world and are adopted via IEC on a global basis. Fortress strive to adhere to such standards from design phase through to final product delivery, so that our customers can have peace of mind that their product or system selection from Fortress complies with the very latest machinery safety standards, regardless of where in the world the equipment is deployed.

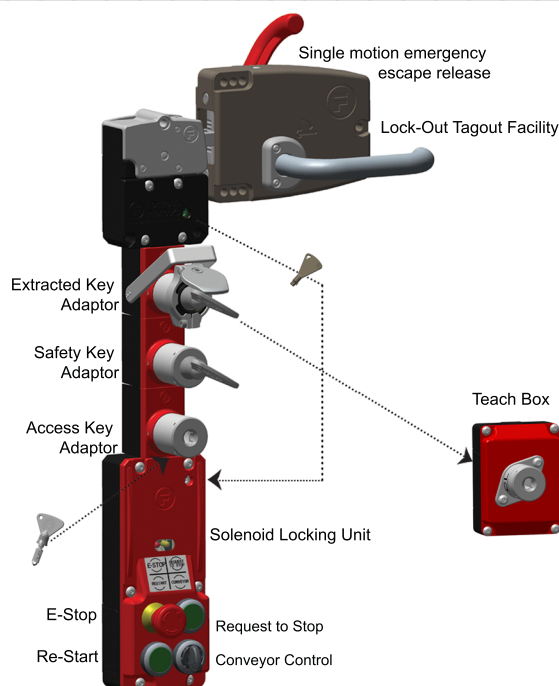
Our amGardpro range currently complies with the following ISO ‘Safety of Machinery’ standards:-

- EN ISO 13849-1:2008 Safety of Machinery - Safety related parts of control systems
- EN ISO 14119:2013 Safety of Machinery - Interlocking devices associated with guards
 - Principles for design and selection
- BS EN 62061:2013 Safety of Machinery - Functional safety of safety related electrical, electronic and programmable electronic control systems
- 2006/42/EC The Machinery Directive

Extensive testing of all of our products is inherent in our design for industrial applications. In addition, all of the equipment within the amGardpro range has been independently assessed by TÜV SÜD test house to ensure compliance with EN ISO 13849-1 2008 (Cat. 4 PLe), EN ISO 13849-2:2012 and EN ISO 14119:2013.



Creation and understanding of such standards for machinery safety is also fundamental to Fortress (and hence our customers) and therefore we participate in various working groups and committees that are instrumental in generating and overseeing any changes in such standards. Knowledge is therefore a critical part of the Fortress service offer and we have several functional safety experts within our global applications team who are always on hand to offer advice on product selection, application and standards compliance.



Improved Standards Compliance

- Complies with all new and forthcoming machine safety standards.
- Integrated redundancy sensor solution (with coding options).
- Single motion emergency escape release regardless of solenoid or trapped key locking mechanisms.

Enhanced Machine Control Functionality

- Integrated pushbutton control in single unit.
- Up to 4 Illuminated Pushbuttons/Lamps/Selector Switches, including 1 E-Stop.
- Up to 10 Safety/Access keys in one configuration.

Enhanced Strength

- Stainless steel heads with mounting point, increasing retention force to market leading 10KN.
- Standardisation and enhancement of all anti-vibration features.
- Improved weather resistance.

Compliance = Knowledge + Understanding + Implementation
 = (Standards Working Groups) + (Functional Safety Experts) + (Product / Application)

Fortress - “The interlock of choice”

Our "Competency"

Application Examples

Fortress Interlocks core competency is the design of safety interlock systems and products which are suitable for use in a wide cross section of industries and applications.

Our application expertise covers the following industrial sectors: Manufacturing, Power, Process, Transport. The following section contains a selection of typical applications for Fortress amGardpro products.

amGardpro Application Example I

This example shows the safeguarding of robot areas in which amGardpro products offer a combined mechanical and electrical solution.

1 NO2C6SKL12LL411L0WB00N

By pressing the access request button, the machine or installation is shut down, by the machine control system.

The solenoid, controlled by the machine control system restricts the release of keys A until the guarded area or machine is safe to enter (indicated by the yellow status LEDs).

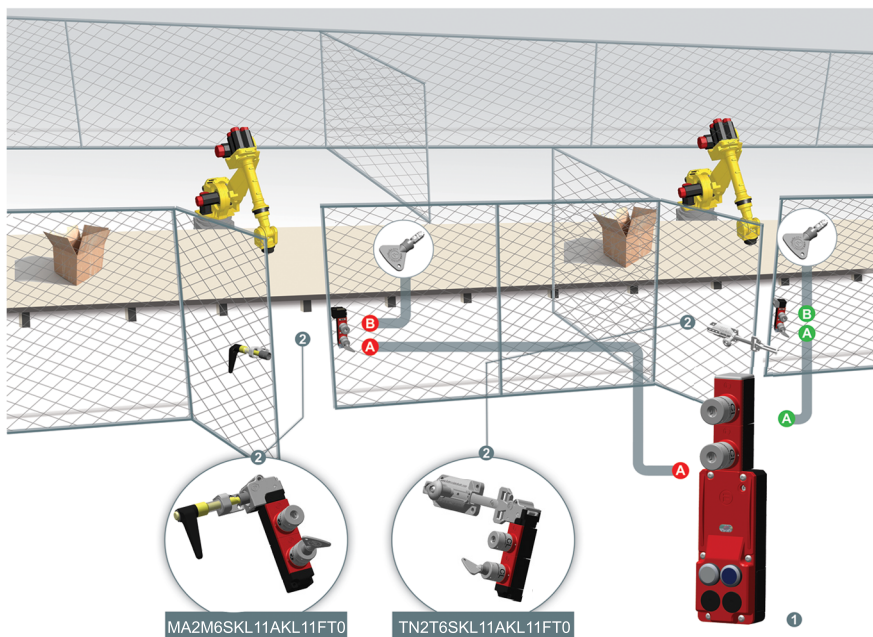
Energising the solenoid breaks the dual safety circuits to prevent unexpected re-start.

Both safety keys A can now be released indicated by the red status LED.

2 TN2T6SKL11AKL11FT0

Keys A can be used to unlock the door locks and release the safety keys B. These can be taken inside the guarded area to prevent personnel being trapped and/or an accidental machine restart.

By reversing this compulsory procedure the machine can safely be restarted.



amGardpro Application Example II

This example shows the safeguarding of a potentially dangerous area with a teach mode function inside.

1 TN2T6SL411BK21

Removal of the key from one of the pods at the doors selects machine stop at the end of a run down cycle. The solenoid is then energised by the machine control system and access can be gained.

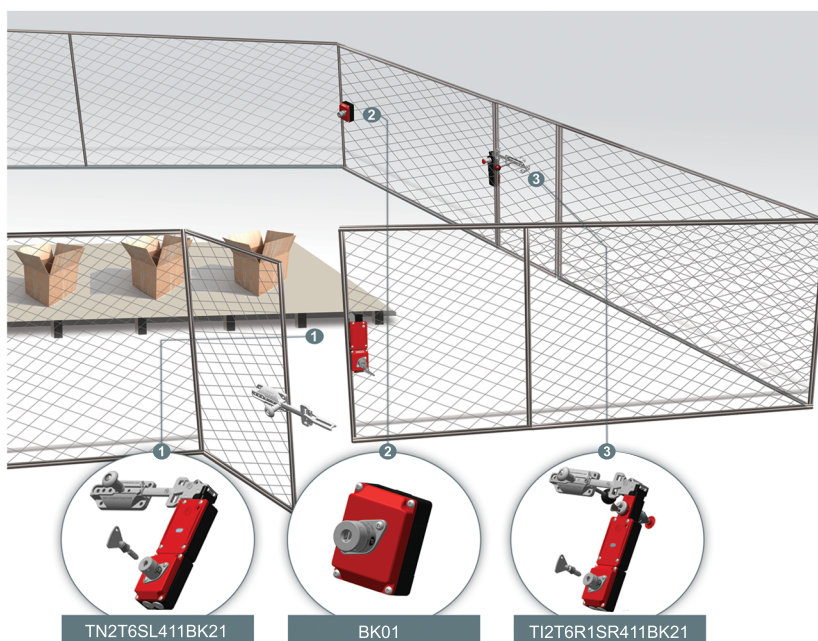
The operator can take the safety key into the potentially hazardous area preventing restart.

2 BK01

By inserting one of the keys in the stand alone pod inside the guarded area safe programming can be initiated.

3 TI2T6R1SR411BK21

The LOK internal release option can be used to unlock the door from inside a guarded area should personnel become trapped. By pushing the button on the rear of the unit, the tongue is released from the actuator head and the door can be opened from the inside. This also breaks both safety circuits, which then have to be manually reset before the machine can re-start.



Our “Competency”

am Gard Applications

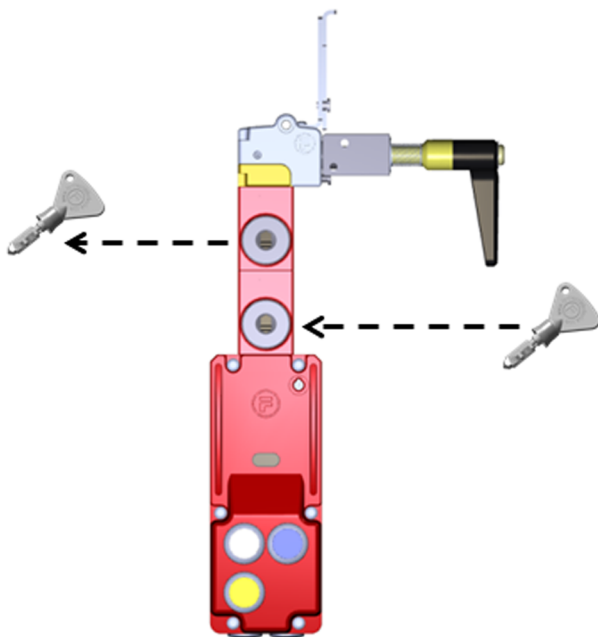
AUTOMOTIVE ROBOT CELL



Application Requirement

Body and White is a stage in the automotive manufacturing in which sheet metal components are welded together to form the vehicles body. This process is undertaken by robots which are confined to a cell. Each cell contains a series of robots that either undertakes pick-and-place or spot welding activities. Such machinery is extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only enter the guarded area once all machinery is isolated and has come to rest. Guard doors are interlocked with safety gate switches such that control power to all moving part is isolated prior to opening the actual guard doors.

Solenoid Controlled Safety Gate Switch



MA4M7SKL11AKL11LL416LOWBYON

Key Facts

Fortress Solution

The Fortress solution comprised the following:-
MA4M7SKL11AKL11LL416LOWBYON -
Solenoid Controlled Safety Gate Switch

Sequence of Operation

An operator requests entry by pressing the white push button which energises the solenoid, illuminating the yellow LED on the *proLOK* body and bringing each robot to a complete rest. Once every robot has come to a controlled stop, the operator must insert the access key into the secondary lock and turn it in order to release the safety key which must be retained on the operator's person while they are working inside the cell. Before the operator enters the cell, he must apply a padlock to the lock-out tag-out attachment which is fitted to the switches head.

The lock-out tag-out procedure ensures that the guard door cannot be closed and locked and therefore the robots cannot be restarted while any personnel are working inside the cell.

Our "Competency"

am Gard Applications

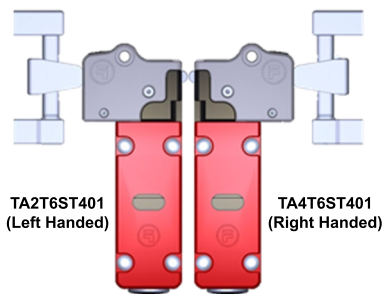
BRICK PRESS SYSTEM



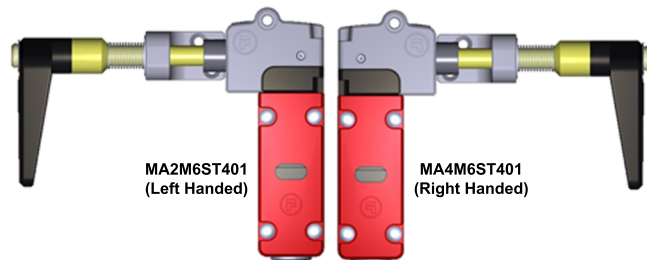
Application Requirement

The Brick press in a Clayware factory is used to press large chunks of moulded clay into the individual brick moulds ready for them to be dried before they are sent to the Kiln to solidify the mould into the final hardened product. Such machinery is extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only gain entry once power to the machine has been isolated. All interlocks have been specifically designed to ensure their continued operation in these arduous, dusty environments.

Tongue Operated Safety Switches



Handle Operated Safety Switches



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

- MA2M6ST401 - Left Handed Handle Operated Safety Switch (for hinged doors)
- MA4M6ST401 - Right Handed Handle Operated Safety Switch (for hinged doors)
- TA2T6ST401 - Left Handed Tongue Operated Safety Switch (for sliding doors)
- TA4T6ST401 - Right Handed Tongue Operated Safety Switch (for sliding doors)

Sequence of Operation

Maintenance personnel need to access these machines at a moment's notice: therefore each access point to the brick press machine is fitted with a safety switch that automatically stops the machine as soon as any of the guard doors are opened. This illuminates the red LED on the effected safety switch and power to the machine can only be restored once all access points have been locked closed.

Our “Competency”



Applications

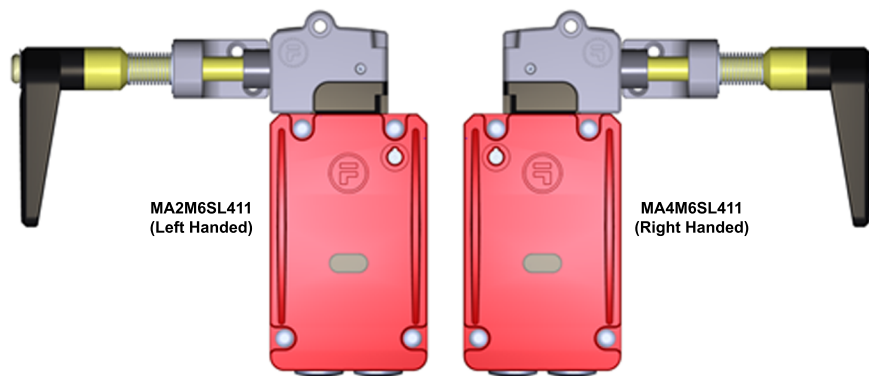
AUTOMATED BEVERAGE FILLER MACHINE



Application Requirement

Automated filler machines are used in beverage manufacturing plants to fill a bottle up with the freshly produced beverages. To comply with global food safety regulations, such machinery is extensively guarded and interlocked to limit the possibility of external contamination. However, maintenance personnel may require access to the machine and so each access point is fitted with a Solenoid controlled safety switch to ensure that entry is only possible once power to the machine has been isolated.

Solenoid Safety Gate Switch



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

MA2M6SL411 - Solenoid Controlled Safety Switch (Left Handed)

MA4M6SL411 - Solenoid Controlled Safety Switch (Right Handed)

Sequence of Operation

An operator requests entry using the nearby control panel which isolates power to the machine, bringing the machine to a controlled stop. Once the solenoid has been energised, an operator can remove the handle that was previously locking the door in place and gain entry to the machine. The machine cannot restart until the door has been locked closed by refitting the handle into the head of the solenoid controlled safety switch.

Our “Competency”

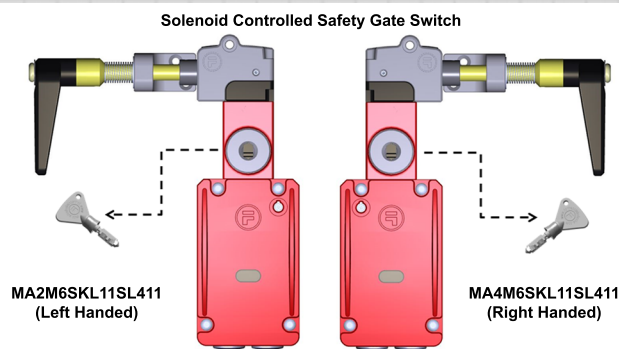
am Gard Applications

AUTOMATED DEEP FRYER CELL



Application Requirement

An automated deep fryer cell is used to mass produce French fries for consumer markets in a fast and efficient manner. Once the potatoes have been processed and cut into the desired French fries shape, large quantities of French fries are cooked in oil inside the automated deep fryer cell at a temperature of 200°C. The entire cell is enclosed in a stainless steel casing and access is only required at interval periods to clean the cell before the next batch are cooked. Such machinery is extensively guarded and interlocked to ensure that personnel can only enter the cell once power to the cell has been isolated and the temperature inside the cell has become safe.



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

- MA2M6SKL11SL411 - Solenoid Controlled Safety Switch (Left Handed)
- MA4M6SKL11SL411 - Solenoid Controlled Safety Switch (Right Handed)

Sequence of Operation

An operator requests entry using the nearby control panel located next to the stairs that lead up to the main access point to the automated deep fryer cell. Once power to the machine has been isolated and has come to a controlled stop, this energises the solenoid and allows the operator to unlock the guard door by turning and removing the safety key. The operator can retain this key on his person while working inside the cell to ensure that the door cannot be locked closed and therefore the machine cannot be restarted.

Our “Competency”

am Gard pro Applications

PALLETISER

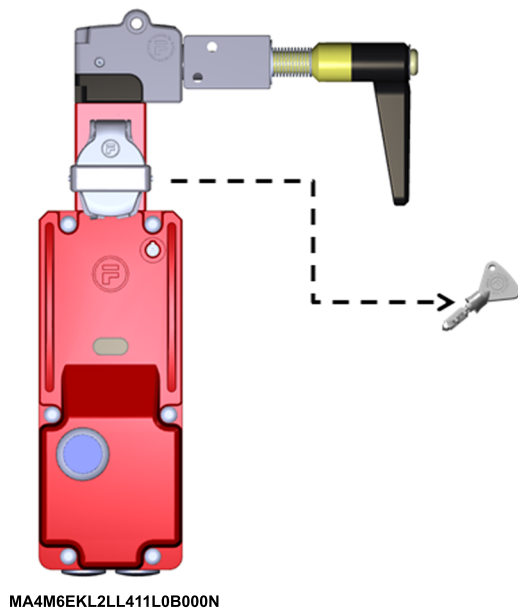


Application Requirement

A palletiser is a machine which provides automatic means for stacking cases of finished products onto a pallet ready for shipment. A palletiser is the most common end of line packaging solution used in almost all manufacturing facilities.

Such machinery is extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only enter the guarded area once all machinery is isolated and has come to rest. Guard doors are interlocked with safety gate switches such that control power to all moving parts is isolated prior to opening the actual guard doors.

Solenoid Controlled Safety Gate Switch



Key Facts

Fortress Solution

The Fortress solution comprised the following:-
MA4M6EKL2LL411L0B000N -
Solenoid Controlled Safety Gate Switch

Sequence of Operation

An operator requests entry by pressing the blue push button which energises the solenoid, illuminating the yellow LED on the *proLOK* body and bringing the machine to a complete rest. Once the machine has come to a controlled stop, the operator must remove the extracted key from its lock in order to disengage the actuator and unlock the guard door. The operator should retain this key on his person while working inside the machine to ensure that the guard door cannot be closed and locked and therefore guaranteeing that the machine cannot be restarted.

Our “Competency”

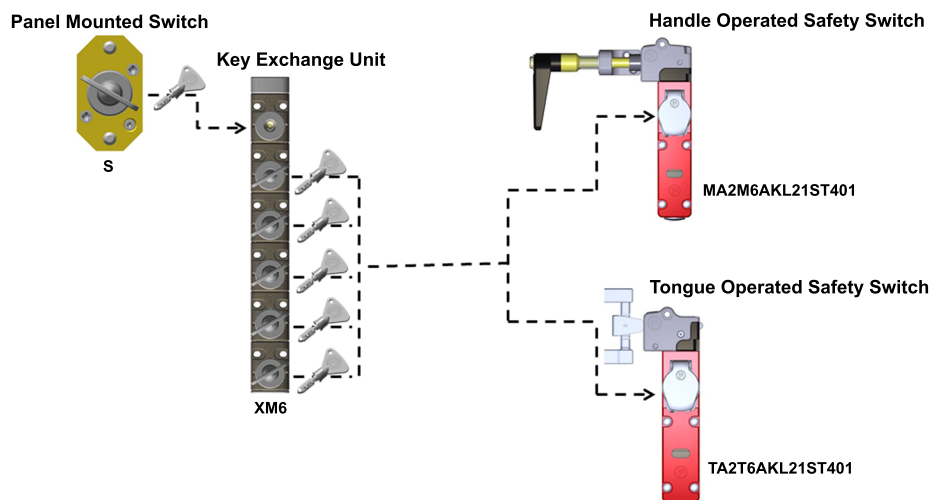
am Gard pro Applications

BALE PRESS



Application Requirement

An industrial bale press in a recycling plant compresses waste material into stackable, manageable chunks (bales) before the recyclable material is sent off for reprocessing. Such machinery is extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only gain entry once power to the machine has been isolated. Guard doors are fitted with safety switches so that power to all moving parts has been isolated prior to opening the actual guard doors.



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

S - Panel Mounted Switch Unit

MA2M6AKL21ST401 - Handle Operated Safety Switch

XM6 - Key Exchange Unit

TA2T6AKL21ST401 - Tongue Operated Safety Switch

Sequence of Operation

An operator isolates power to the machine by turning and removing the key from the 'S' panel mounted switch unit which is located on the bale press's control desk. This key is then inserted into the 'XM6' key exchange unit which releases 5 keys that can be used to gain entry to any of the 5 access points on the bale press. In order to gain entry to the guarded area, the operator inserts any of the 5 keys released from the key exchange unit into the access locks on the safety gate switches which illuminates a red LED and disengages the locking mechanism allowing the guard door to be opened. The machine will only restart once all keys have been returned to their original positions.

Our "Competency"

am Gard pro Applications

ELECTROLYTIC GALVANIZING LINE

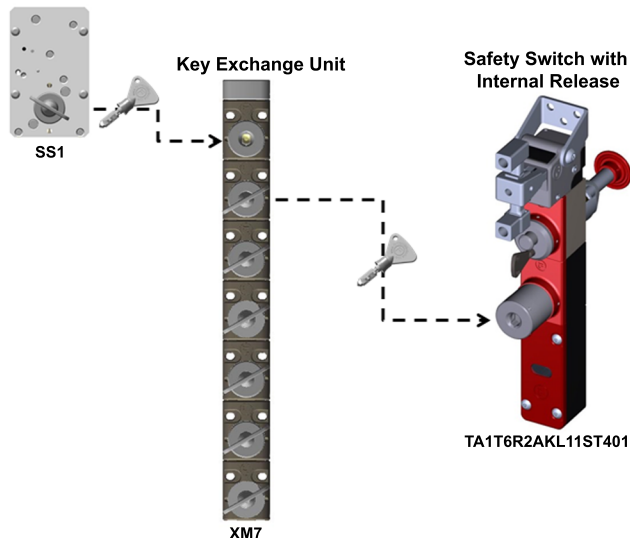


Application Requirement

The Electrolytic Galvanizing line in a steel factory is used to apply a layer of zinc coating, using an electrical current, to the processed steel in order to protect it against corrosion.

There are three main areas to the Electrolytic Galvanizing line: the rolling area, the buffer area and the cutter area, that can be identified by a specific colour. Each area has been extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only gain entry once power to the machine has been isolated. Guard doors are fitted with safety switches so that power to all moving parts has been isolated prior to opening the actual guard doors.

Panel Mounted Solenoid Switch



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

- SS1 - Panel Mounted Solenoid Switch Units
- XM8 - Key Exchange Unit (Area 1)
- XM7 - Key Exchange Unit (Area 2)
- XM4 - Key Exchange Unit (Area 3)
- TA1T6R2AKL11ST401 - Safety Switches with Internal Release

Sequence of Operation

An operator isolates power to each area of the production line by turning and removing the required key from the 'SS1' panel mounted solenoid switch unit which are all located in the control desk housed inside the electrolytic galvanizing lines control room. Each key can be inserted into the corresponding key exchange unit in order to release the access keys that can be taken to the individual safety switches mounted at the various access points within each area. In order to gain access to the guarded area, the operator inserts the access key into the safety switch which disengages the locking mechanism, unlocking the door to the guarded area. If the operator should find themselves locked inside the guarded area for any unforeseen reason, the operator can override the safety switches locking mechanism and release themselves from inside the machine.

Our "Competency"



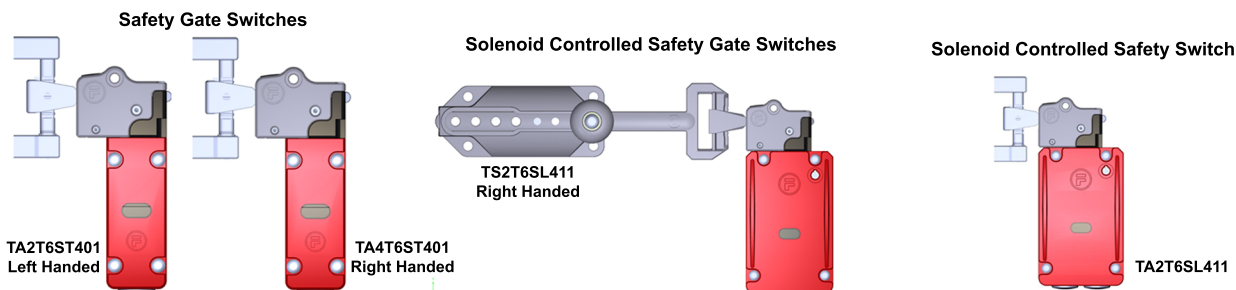
Applications

METAL SHEET CUTTING LINE



Application Requirement

A sheet cutting line in a steel factory is used to cut sheet metal into a desired shape for a specific application. The cutting process involves a shearing force being applied by two tools, one above and one below. The force being applied to the sheet causes the material to fail and separate at the designated cut location. Such machinery is extensively guarded and interlocked to ensure that operators and/or maintenance personnel can only enter the guarded area once all machinery is isolated and has come to rest. Certain access doors that permit instant access are fitted with standard safety switches. Access may be required to the main cutting area, if the cutting machine is stopped suddenly the sheet metal being processed could be jeopardised. Fitting a solenoid gate switch means the machine can come to a controlled stop avoiding wastage of the sheet metal.



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

- TA2T6ST401 - Left Handed Safety Switch (Tongue Operated)
- TA4T6ST401 - Right Handed Safety Switch (Tongue Operated)
- TS2T6SL411 - Solenoid Controlled Safety Switch (Slidebar Operated)
- TA2T6SL411 - Solenoid Controlled Safety Switch (Tongue Operated)

Sequence of Operation

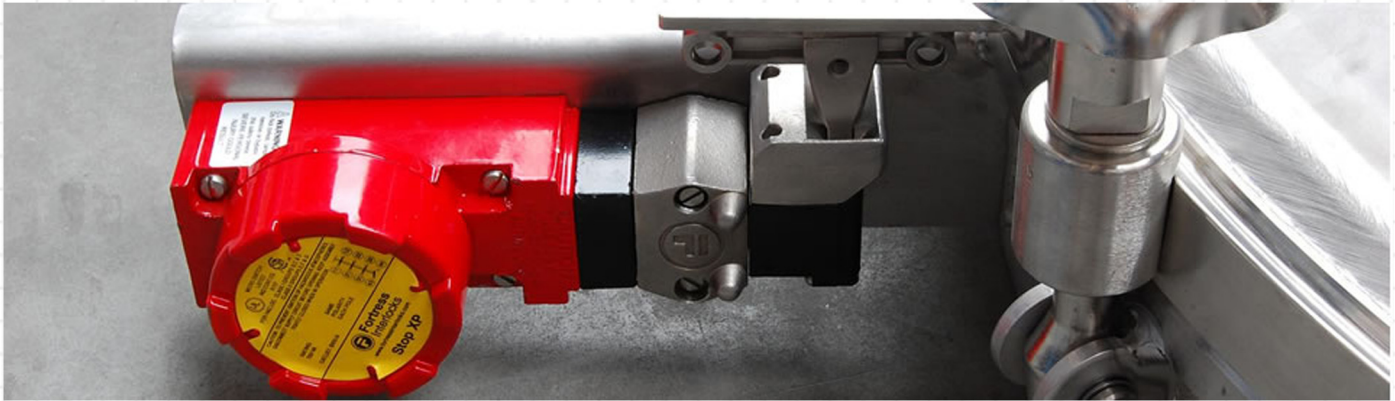
If access is required to a section of the sheet cutting line that permits immediate access, an operator isolates power to the machine by disengaging the actuator from the head mechanism and opening the guard door. Opening the door illuminates a red LED on the body of the safety switch and power to the effected section of the machine will only restart once the guard door has been locked closed by reinserting the actuator into the safety switches head mechanism.

If access to the main cutting area is required, an operator requests entry at a nearby control panel which isolates power to the machine, energising the solenoid once the machine has come to a complete stop. This illuminates a yellow LED on the solenoid controlled safety switch which enables the operator to disengage the slidebar from the head mechanism and open the door to the guarded area.

Our “Competency”

am Gard pro Applications

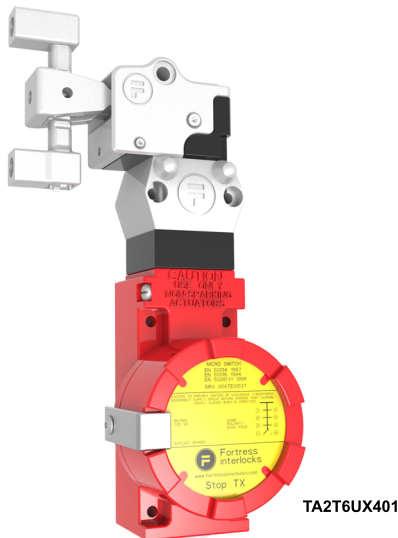
MIXING VESSEL



Application Requirement

Mixing vessels in chemical processing plants are used to house the chemical compounds that have been mixed together to form the finished product. All vessels are air-tight to ensure that no outside contaminants can affect the chemical reaction that is taking place within the mixing vessels. There are a series of blades on the inside of the mixer that operate at incredibly fast speeds to blend the chemicals together. Therefore, such chemical processing machinery is extensively interlocked to ensure that cleaning and/or maintenance personnel can only gain entry to the vessels once power to the machine has been isolated and the chemicals being processed have been removed from the mixing vessels.

Explosion Proof Safety Switch



Key Facts

Fortress Solution

The Fortress solution comprised the following:-
TA2T6UX401 - Explosion Proof Safety Switch

Sequence of Operation

In order to gain entry to the mixing vessels, an operator must isolate the power using a nearby control panel. The operator must then unscrew all the air tight fixings holding the vessels hatch door closed. Once all of these fixings are removed, the operator can gain entry by using the handle to open the mixing vessels hatch door. Upon opening the hatch door, this disengages the tongue from the locking mechanism on the 'TA2T6UX401' explosion proof safety switch to ensure that power to the machine cannot be restarted.

Our "Competency"

am Gard pro Applications

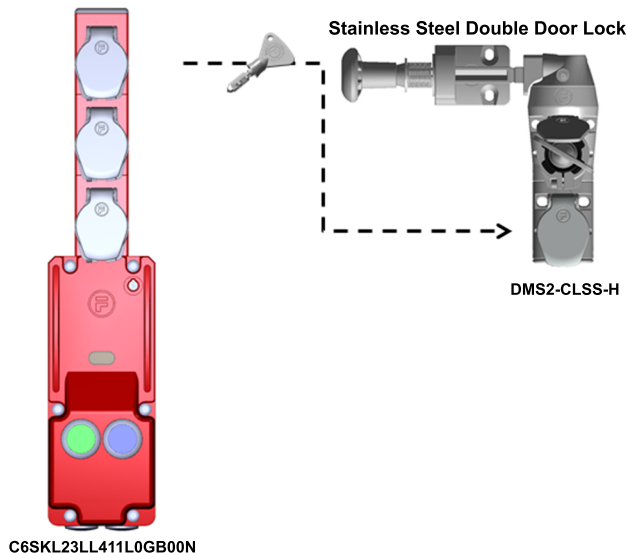
PAPER ROLLING MILL



Application Requirement

Paper manufacturing plants use hot rolling lines on the dry end of the plant to heat and dry the wet sheets of recently processed paper, this seals the fibres closer and closer together to form the final product. However, regular access for cleaning and product quality control is required several times every hour therefore, such machinery is extensively guarded and interlocked to ensure that cleaning, quality control and/or maintenance personnel cannot gain access to the guarded area until power to the machine has been isolated.

Solenoid Safety Switch with Key Bank



Key Facts

Fortress Solution

The Fortress solution comprised the following:-

C6SKL23LL411L0GB00N -

Solenoid Controlled Safety Switch with Safety Key Blank

DMS2-CLSS-H -

Mechanical Door Locks

Sequence of Operation

An operator requests entry by pressing the green push button on the 'C6SKL23LL411L0GB00N' solenoid controlled safety switch which energises the solenoid and brings the machine to a controlled stop. Once the machine has come to a complete rest, the three keys can be released and taken to three separate access points along the paper rolling area. These keys can be inserted into 'DMS2' mechanical door locks which disengages the locking mechanism allowing access to the guarded area and releases an additional safety key. The operator can retain this key on his person while working inside the machine to ensure that the door cannot be locked closed and therefore the machine cannot be restarted.

Configurations

am Gard is a modular design that enables the user to configure a wide range of safety gate switches to exactly meet the specific application. The products can therefore be used to satisfy a range of machine guarding situations. You simply select the actuator and head mechanism and then add in key modules and/or control units, as needed.

Actuator and Head



+



+



+

Key Modules



+



+

+

Control Unit



Common Configurations

Handle Operated Solenoid Switch



Non Solenoid Tongue Switch



Handle Operated Tongue Switch with Safety Key



Handle Operated Solenoid Switch with Pushbutton Control





Actuators

AM Handle

AT Tongue

Slidebar

All in 1 Head & Handle Combination

EN Handle

EF Handle

EH Handle

Hinged Handle - Short Reach

Hinger Handle - Long Reach

MA*

TA*

SA*

TI*

TN*

TS*

EI2

I6

A6

EI4

I7

A7

EN4

EF2

EH2

EH4

HL1

HS1

Head Modules

Cap

AM Head

AT Head

AT Slimline Head

C6

M6

M7

M8

T6

T7

T8

S6

Adaptors

Extracted Key Adaptor

Safety Key Adaptor

Access Key Adaptor

Internal Release

EK**

SK**

AK**

R1

R2

R3

R4

R6

R7

R8

R9

RW

RX

RY

RZ

Electrical Switching / Locking

Extended Solenoid Controlled Switch Body

Non Solenoid Switch Body

Solenoid Controlled Switch Body

Solenoid Controlled Switch Body with Internal Release

Explosion Proof Safety Switch Body

Foot

LL***

LR***

ST***

SL***

SR***

SE***

LE***

EX

UX

FT0

Option Pods

RFID Pod

Key Switch Pod

Pushbutton / Lamp Pod

Accessories

B00000*

B10000*

B20000*

B50000*

B60000*

B70000*

B0****

B1****

B2****

B5****

B6****

B7****

BK**

AML

ATL

DD7

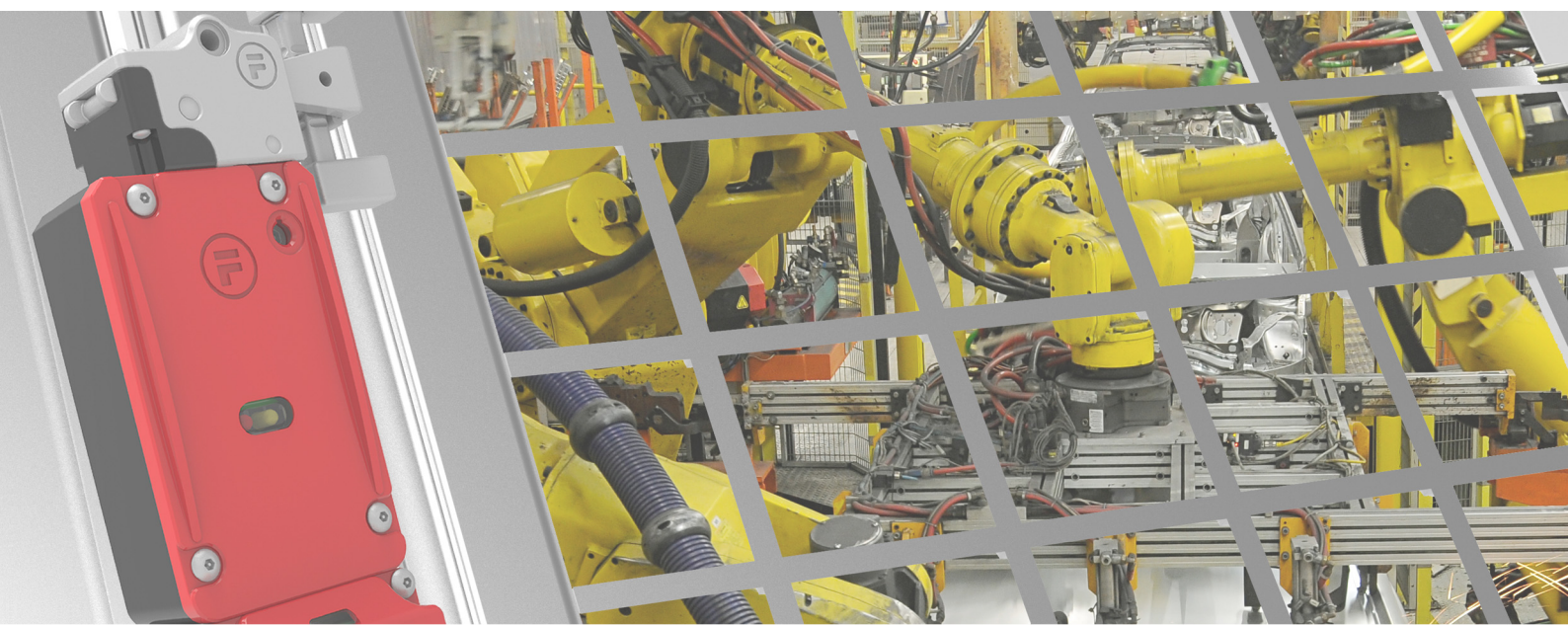
Drop Down Lock-Out

AM Lock-Out Clip

AT Lock-Out Clip

amGard*pro* Configuration Tool

Also available on our website www.fortressinterlocks.com as an online configurator



LEARN MORE

Step 1: Choose the Actuator



For use with 'W' Heads

proAM Handle



Part No.	Description
MA	AM Handle

Turning motion holds door closed. Ideal for non locking set ups (i.e. proSTOP devices)



Part No.	Description
MI	AM Handle with Internal Release

Turning motion holds door closed. Internal handle allows user to open door from inside (pushIR may be required depending on application)

For use with 'T' Heads

proSlidebar Options



Part No.	Description
TN	Slidebar without a spring

Sliding motion holds door closed. With no return spring unit remains in the position it is left in



Part No.	Description
TS	Slidebar with a return spring

Sliding motion holds door closed. Return spring pulls the slidebar open, preventing clashes with the head (but requires the slidebar to be held forward whilst locking)



Part No.	Description
TI	Slidebar with Internal handle but no return spring

Sliding motion holds door closed. Same as a TN but IR knob allows door to be opened (but not closed) from the inside when main unit is unlocked



Part No.	Description
TM	Slidebar with Internal handle c/w TK Short Tongue

Sliding motion holds door closed. Short TK tongue allows padlock through tongue to act as a lock out. Additional lock out space at rear of slidebar



Part No.	Description
TG	Slidebar with Internal handle for GM

Sliding motion holds door closed. Short TK tongue allows padlock through tongue to act as a lock out. No additional lock out space at rear of slidebar



Part No.	Description
TF	Slidebar with Internal handle c/w spacer behind the knob

Same as a TN but IR knob allows door to be opened and closed from the inside when main unit is locked

For use with 'S' Heads

proHinged Handle Options



Part No.	Description
HS1	proHinged Handle - Short Reach for use with proStop units (40mm wide)

Particularly useful for applications using small radius hinged doors (250mm min)



Part No.	Description
HL1	proHinged Handle - Long Reach for use with proLok units (80mm wide)

Particularly useful for applications using small radius hinged doors (250mm min)

For use with 'I' Heads

proRelease IR Handle



Part No.	Description
EI	proIR Handle to allow emergency release (only to be used with I6 or I7 head).

Handle motion holds door closed. Red handle overrides all locking mechanisms and opens safety contacts to allow escape release

NO Actuator Required

X

Part No.	Description
NO	No Actuator required

Select this when you wish to specify head direction (Handing) but are not purchasing an actuator

pro 1

MI, TI, TM, TG, TF and EH work well with a pushIR unit (see step 4)

pro 1

"If no Actuator is required go to Step 3, where you can select a Head or Cap (C6)"

Actuators

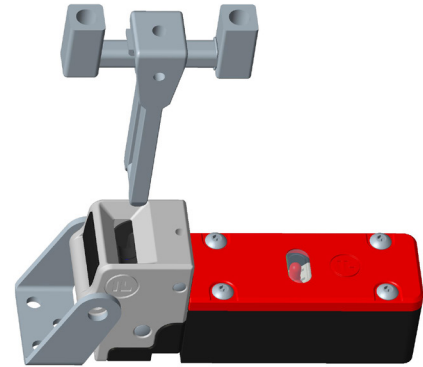
pro 1

"If you select a Slimline Tongue SA, you must then select Slimline Head S6 only"

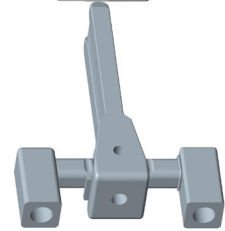
*For use with 'S' Heads ONLY

Step 2: Choose the Handing

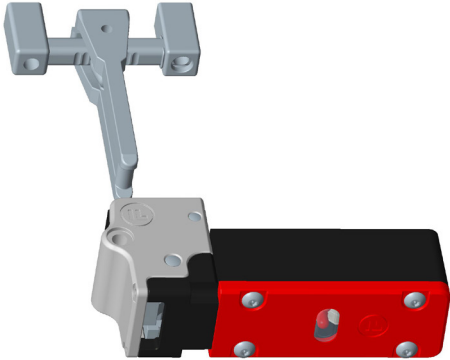
Actuators



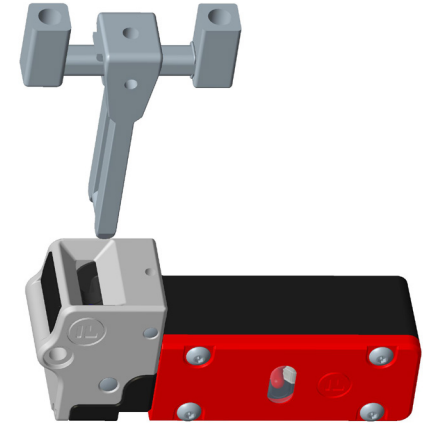
Part No.	Handing Description
1	Front Facing



Part No.	Handing Description
2	Left Hand



Part No.	Handing Description
3	Rear Facing



Part No.	Handing Description
4	Right Hand

pro
i

Even if you have not chosen an actuator from Step 1, you can still choose handing for the head module

pro
i

If you chosen an EI Actuator from Step 1, Front Facing, 1 and Rear Facing, 3 Handing Options are not allowed

Step 3: Choose the Head Module

Head Modules

proCap Options



Part No.	Description
C6	To terminate assemblies without heads

Terminates assemblies without heads

proAM Head Options



For use with actuators:
MA
MI

Part No.	Description
M6	proAM Head

Turning motion holds door closed. Ideal for non locking set ups (i.e. *proSTOP* devices)



For use with actuators:
MA
MI

Part No.	Description
M7	proAM Head c/w Drop Down Lockout

M6 head with drop down lockout. This lockout features slides into place every time actuator is removed. Ideal for applications where lockout is to be used on every entry



For use with actuators:
MA
MI

Part No.	Description
M8	proAM Head c/w Lock-Out Clip

M6 head with drop down clip. Ideal for applications where lockout is not to be used on every entry

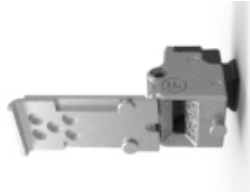
proAT Head Options



For use with actuators:
TA
TK
TI
TN
EH

Part No.	Description
T6	proAT Head

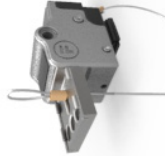
High strength and ease of opening makes this the most popular head in the amGard*pro* range



For use with actuators:
TA
TK
TI
TN
EH

Part No.	Description
T7	proAT Head c/w Drop Down Lockout

T6 head with drop down lockout. This lockout features slides into place every time actuator is removed. Ideal for applications where lockout is to be used on every entry



For use with actuators:
TA
TK
TI
TN
EH

Part No.	Description
T8	proAT Head c/w ATL Lock-Out Clip

T6 head with drop down clip. Ideal for applications where lockout is not to be used on every entry

proAT Slimline Head Options



For use with actuators:
SA

Part No.	Description
S6	proAT Slimline Head

S6 Head with the HL 1 for the Lok must be forward facing only.

S6 Head with the HS1 for the Stop / Safety Key must be forward facing only.

S6 Head with the SA* Tongue for the Lok / Safety Key can be any facing.

pro 1

Ensure the head module you have selected works with the actuator you have selected in Step 1

proRelease IR Handle Options



For use with actuators:
EI

Part No.	Description
I6	proIR Head (only works in conjunction with EI handle)
A6	Auto reset all in one head (only works in conjunction with EI handle)

Handle motion holds door closed. Red handle overrides all locking mechanisms and opens safety contacts to allow escape release



For use with actuators:
EI

Part No.	Description
I7	proIR Head c/w drop down lockout (only works in conjunction with EI handle)
A7	Auto reset all in one head c/w drop down lockout (only works in conjunction with EI handle)

I6 / A6 head with drop down lockout. This lockout features slides into place every time actuator is removed. Ideal for applications where lockout is to be used on ever entry

Step 4: Do you want a Push IR



Adaptors

A PushIR will allow emergency exit even if unit is locked by keys and or solenoid. A PushIR is **not** needed if a EI Handle and I Head have already been specified. (note, a pull reset (R6, R7, R8 & R9) reduces the safety of the system).



Part No.	Push IR Description
R1	Key Reset (up to 40mm panel thickness)

Same as RW but key reset to ensure all incidents are reported



Part No.	Push IR Description
R2	Key Reset (up to 60mm panel thickness)

Same as RX but key reset to ensure all incidents are reported



Part No.	Push IR Description
R3	Key Reset (up to 80mm panel thickness)

Same as RY but key reset to ensure all incidents are reported



Part No.	Push IR Description
R4	Key Reset (variable length - for panel thickness over 80mm and up to 1m)

Same as RZ but key reset to ensure all incidents are reported



Part No.	Push IR Description
R6	Pull Reset (up to 40mm panel thickness)

Same as RW but pull reset allows door to be relocated from the inside (requires careful risk assessment to ensure this is acceptable)



Part No.	Push IR Description
R7	Pull Reset (up to 60mm panel thickness)

Same as RX but pull reset allows door to be relocated from the inside (requires careful risk assessment to ensure this is acceptable)



Part No.	Push IR Description
R8	Pull Reset (up to 80mm panel thickness)

Same as RY but pull reset allows door to be relocated from the inside (requires careful risk assessment to ensure this is acceptable)



Part No.	Push IR Description
R9	Pull Reset (variable length for panel thickness over 80mm and up to 1m)

Same as RZ but pull reset allows door to be relocated from the inside (requires careful risk assessment to ensure this is acceptable)



Part No.	Push IR Description
RW	Front Reset no key (up to 40mm panel thickness)

Overrides all locking mechanisms and opens safety contacts to allow escape release. Simple push reset allows quick restart. Suitable for panels upto 40mm thick



Part No.	Push IR Description
RX	Front Reset no key (up to 60mm panel thickness)

Overrides all locking mechanisms and opens safety contacts to allow escape release. Simple push reset allows quick restart. Suitable for panels upto 60mm thick



Part No.	Push IR Description
RY	Front Reset no key (up to 80mm panel thickness)

Overrides all locking mechanisms and opens safety contacts to allow escape release. Simple push reset allows quick restart. Suitable for panels upto 80mm thick



Part No.	Push IR Description
RZ	Front Reset no key (variable length for panel thickness over 80mm up to 1m)

Overrides all locking mechanisms and open safety contacts to allow escape release. Simple push reset allows quick restart. Suitable for panels upto 300mm thick

pro
i

If a Push IR is not required leave part number blank and go to Step 5

Step 5: Choose a Extracted Key Module



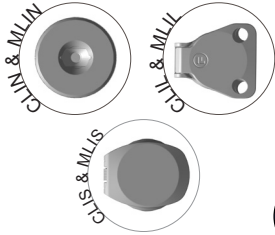
Adaptors

Part #

E	K	
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Description	Part No.
Standard Lock	L
Releasing Lock (must be used if a PushIR or EI Handle and Head used).	R

Description	Information	Part No.
Standard Lock no dustcover	Removed key ensures door cannot be locked until operator returns from cell with the key. Extracted version will not open door until key is removed	1
Standard Lock with dustcover	Same as EK_1 but with dustcover for dusty environments	2
Standard Lock with padlockable dustcover	Same as EK_1 but pad lockable dustcover allows lockout feature	3
Masterable Lock no dustcover	Same as EK_1 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	6
Masterable Lock with dustcover	Same as EK_2 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	7
Masterable Lock with padlockable dustcover	Same as EK_3 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	8



pro 1

If an Extracted Key Adaptor is not required leave part number blank and go to Step 6

or

If you've selected an I6/I7 then select a releasing lock.

If you've selected a pushIR adaptor then select a releasing lock.

Step 6: Choose a Safety Key Adapter



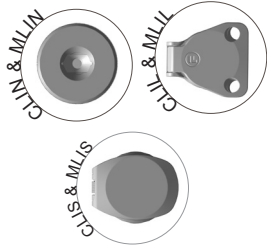
Part #

S	K			
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Description	Part No.
Standard Lock	L
Releasing Lock (must be used if a PushIR or EI Handle and Head used).	R

Description	Information	Part No.
Standard Lock no dustcover	Removed key ensures door cannot be locked until operator returns from cell with the key	1
Standard Lock with dustcover	Same as SK_1 but with dustcover for dusty environments	2
Standard Lock with padlockable dustcover	Same as SK_1 but pad lockable dustcover allows lockout feature	3
Masterable Lock no dustcover	Same as SK_1 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	6
Masterable Lock with dustcover	Same as SK_2 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	7
Masterable Lock with padlockable dustcover	Same as SK_3 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	8

Description	Part No.
No. of Safety Lock Adaptors required	1 - 9



or

If you've selected an I6/I7 then select a releasing lock.

If you've selected a pushIR adaptor then select a releasing lock.

pro 1
If a Safety Key Adaptor is not required leave part number blank and go to Step 7

pro 1
Total Extracted, Safety & Access Locks in one configuration is Max 9



Adaptors

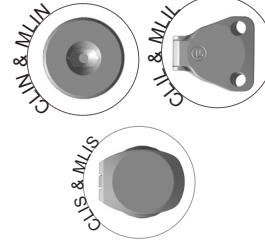
Part #

A	K			
---	---	--	--	--

Part No.	Description
L	Standard Lock
R	Releasing Lock (must be used if a Push/R or El Handle and Head used).

Description	Information	Part No.
Standard Lock no dustcover	Ensures door cannot be opened without access key. Access key could be held by authorised individuals (e.g. maintenance) or it could have been released by a separate unit	1 CLIN
Standard Lock with dustcover	Same as AK_1 but with dustcover for dusty environments	2 CLIS
Standard Lock with padlockable dustcover	Same as AK_1 but pad lockable dustcover allows lockout feature	3 CLIL
Masterable Lock no dustcover	Same as AK_1 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	6 MLIN
Masterable Lock with dustcover	Same as AK_2 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	7 MLIS
Masterable Lock with padlockable dustcover	Same as AK_3 but master lock allows a single key to override all locks (master key must be carefully controlled on site)	8 MLIL

Description	Part No.
No. of Access Lock Adaptors required	1 - 9



If you've selected an I6/I7 then select a releasing lock.

If you've selected a pushIR adaptor then select a releasing lock.

**If an Access Key
Adaptor is not
required leave part
number blank and
go to Step 8**

**Total
Extracted,
Safety & Access
Locks in one
configuration is
Max 9**

Step 8: Choose a Electrical Switching / Locking Body



Electrical Switching / Locking

proLok Body

SL



SE



proLok+ Body

LL



LE



proStop Body



proStopEX/UX Body



proStop Foot



Part No.	Description	Information
SL	Short Lok Body	Solenoid controlled safety switch. Holds door locked until signal sent to unlock. No provision for control buttons
SR	Short Lok Body - Releasing (must be used if a pushIR or EI handle and head used).	Same as SL but allows pushIR or EI handle to override it
SE	Short Lok Body - Integrated Escape Release	Same as SL but it's integrated escape release button overrides locking mechanism and opens safety contacts (Does not work with key adaptors, EI or pushIR)

or

If you've selected an I6/I7 then select a releasing lock.

If you've selected a pushIR adaptor then select a releasing lock.

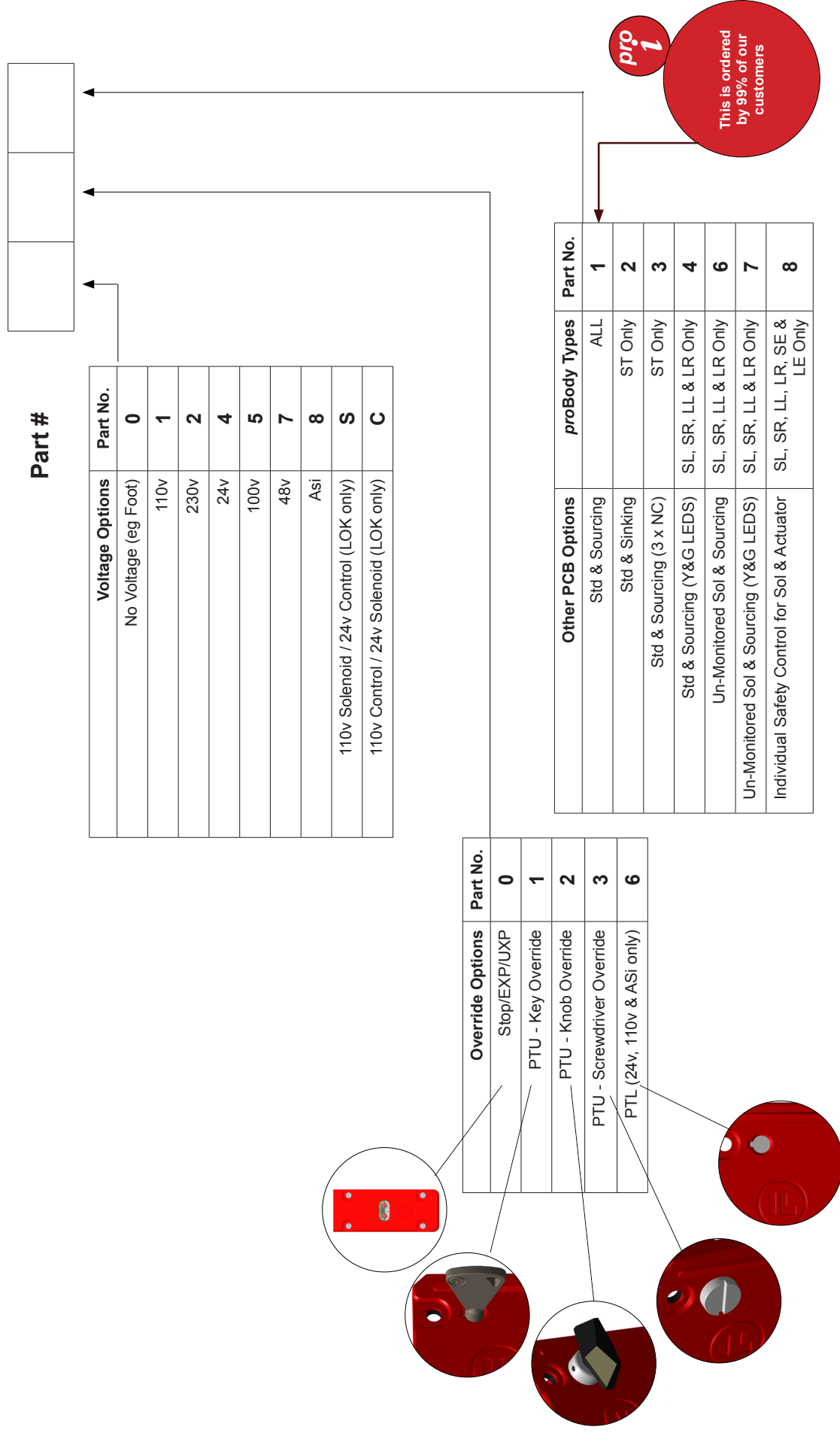
Part No.	Description	Information
LL	Long Lok Body	Solenoid controlled safety switch. Holds door locked until signal sent to unlock. With space for control buttons
LR	Long Lok Body - Releasing (must be used if a pushIR or EI handle and head used).	Same as LL but allows pushIR or EI handle to override it
LE	Long Lok Body - Integrated Escape Release	Same as LL but it's integrated escape release button overrides locking mechanism and opens safety contacts (Does not work with key adaptors, EI or pushIR)

Part No.	Description	Information
ST	Stop Body	Safety switch

Part No.	Description	Information
EX	EU Explosion Stop Body	Safety switches suitable for explosive environments with EU certification
UX	US Explosion Stop Body	Safety switches suitable for explosive environments with US certification

Part No.	Description	Information
FT	To Terminate non-switch configurations	Terminates non-switch configurations (not suitable for units with pushIR or EI handle)

pro i
If an Electrical Switching / Locking Body is not required leave part number blank and continue to Step 10



Step 10: Choose options for Separate Option Pod or proLok+ Body



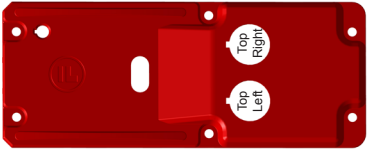
Option Pods

Separate Option Pod

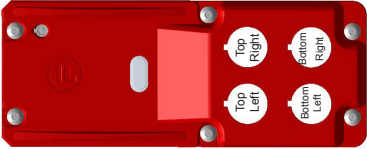


pro i
If you order just one or two push buttons we will retain the order but position them top left and top right

proLok+ Body with 2 hole positions



proLok+ Body with 4 hole positions



Select Unit	Pod Type	Terminals OR QD	AS-I
Stand alone Pod with No holes on top of pod case (stand alone unit)	B	0	5
Pod with one hole on top of pod case for fitting to proStop Body	B	1	6
Pod with two holes on top of pod case for fitting to proLOK Body	B	2	7
proLok+ Body switch information	L	0	5

Part No.	Pushbutton / Lamp Options - 24v only
0	Blank
1	Red Lamp
2	Yellow Lamp
3	Green Lamp
6	Blue Lamp
7	White Lamp
E	E-Stop (twist reset)
H	E-Stop (with additional monitoring contacts, twist reset)
P	E-Stop (pull reset)
U	E-Stop (illuminated twist reset)
L*	Latching selector switch (illuminated)
M*	Momentary selector switch (illuminated)
A*	Latching key switch (90 degree)
R	Red illuminated push button non latching
Y	Yellow illuminated push button non latching
G	Green illuminated push button non latching
B	Blue illuminated push button non latching
W	White illuminated push button non latching
K	Black non illuminated push button non latching

Part No.	Sensors - 24v only
N	No additional switch required
C	Coded Magnet - Left Hand (see step 2 for handing)
D	Coded Magnet - Right Hand (see step 2 for handing)
S	RFID - Left Hand (see step 2 for handing)
T	RFID - Right Hand (see step 2 for handing)

pro i
L, M & A Options can only be fitted in top right or bottom left positions

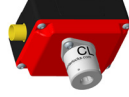
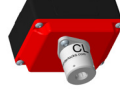
pro i
If an Option Pod or Long Lok Body is not required leave part number blank and continue to Step 11

Option Pods



Part

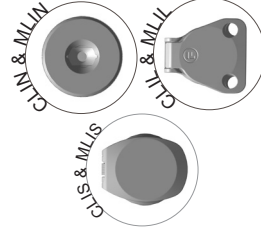
B	K		
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Removal of the key operates a set of safety rated switches. Common uses are: request machine stop, enable teach mode and prevent inadvertent re-start

Select Unit	Part No.
Stand alone Pod with No holes on top of pod case (stand alone unit)	0
Pod with one hole on top of pod case for fitting to <i>proStop</i> Body	1
Pod with two holes on top of pod case for fitting to <i>proLOK</i> Body	2

Description		Part No.
CLIN	Standard Lock no dustcover	1
CLIS	Standard Lock with dustcover	2
CLIL	Standard Lock with padlockable dustcover	3
MLIN	Masterable Lock no dustcover	6
MLIS	Masterable Lock with dustcover	7
MLIL	Masterable Lock with padlockable dustcover	8



pro

**If a Key Switch
Option Pod
is not required
leave part number
blank and continue
to Step 12**

Step 12a: Quick Disconnect Connector Options



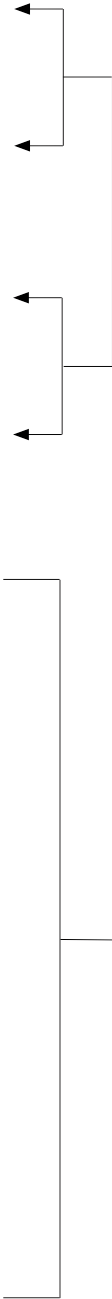
Quick Disconnect Connector Options

D1	D2	D3	D6	D7	D8	D9	E3	E4	F2
No. Pins 5	No. Pins 12	No. Pins 8	No. Pins 14	No. Pins 10	No. Pins 12	No. Pins 12	No. Pins 10	No. Pins 19	No. Pins 19
Max Voltage 300v	Max Voltage 300v	Max Voltage 60v	Max Voltage 30v	Max Voltage 60v	Max Voltage 60v	Max Voltage 300v	Max Voltage 300v	Max Voltage 300v	Max Voltage 300v
Connector M12	Connector UN2	Connector M12	Connector M16	Connector M12	Connector M12	Connector M23	Connector UN2	Connector UN2	Connector M23
1 Brown	1 Orange	1 White	A Brown	1 White	1 White	1 Brown	1 Orange	1 Violet	1 Violet
2 White	2 Blue	2 Brown	C Red/Blue	2 Brown	2 Brown	2 Brown/White	2 Blue	2 Red	2 Red
3 Blue	3 White/Black	3 Green	E Black	3 Green	3 Green	3 Blue	3 White/Black	3 Grey	3 Grey
4 Black	4 Red/Black	4 Yellow	G Pink	4 Yellow	4 Yellow	4 White	4 Red/Black	4 Red/Blue	4 Red/Blue
5 Grey	5 Green/Black	5 Grey	J Green	5 Grey	5 Grey	5 Green	5 Green/Black	5 Blue	5 Green
	6 Orange/Black	6 Pink	L Blue	6 Pink	6 Pink	6 Yellow	6 Orange/Black	6 Green	6 Blue
	7 Blue/Black	7 Blue	M Orange	7 Blue	7 Blue	7 Grey	7 Red	7 Brown	7 Grey/Pink
	8 Black/White	8 Red	N Grey/Brown	8 Red	8 Red	8 Pink	8 Green/Yellow	8 White/Green	8 White/Green
	9 Green/Yellow		O Violet	9 Orange	9 Orange	9 Red	9 Black	9 White/Yellow	9 White/Yellow
	10 Red		P Red	10 Tan	10 Tan	10 Black	10 White	10 White/Grey	10 White/Grey
	11 White		R White	11 Tan	11 Black	11 Violet		11 Black	11 Black
	12 Black		S Grey		12 Violet	12 Green/Yellow		12 Green/Yellow	12 Green/Yellow
			T Yellow					13 Yellow/Brown	13 Yellow/Brown
			U Tan					14 Brown/Green	14 Brown/Green
								15 White	15 White
								16 Yellow	16 Yellow
								17 Pink	17 Pink
								18 Grey/Brown	18 Grey/Brown
								19 Grey/Pink	19 Brown

Step 12b: Quick Disconnect Connector Options

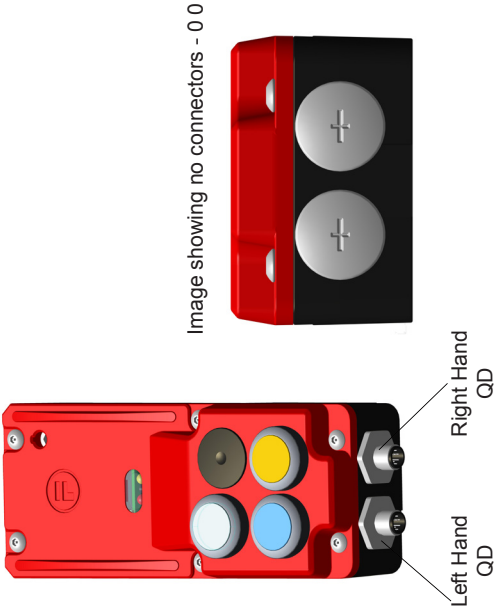


T Wiring										Left Hand QD	Right Hand QD
T	#	#	#	#	#	#	#	#	#		



Contact Fortress engineering to be assigned T Wiring number

	No. Pins	Connector
0	0	
D	1	M12
D	2	UN2
D	3	M12
D	6	M16
D	7	M12
D	8	M12
D	9	M23
E	3	UN2
E	4	UN2
F	2	M23



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