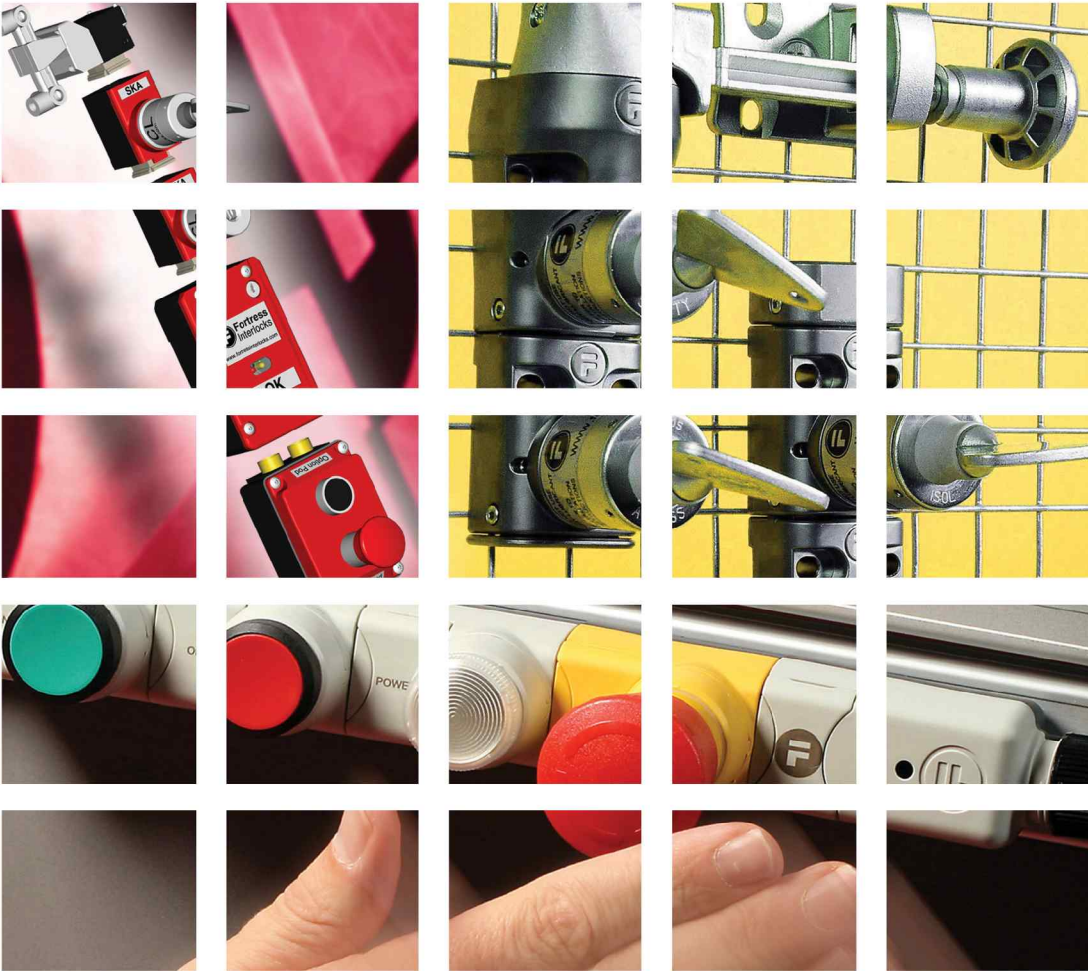


mGard Trapped Key Technology

amGard Safety Gate Switch Interlocks

eGard Total Access & Control



Product Catalogue

Total Access & Control

“Who we are”

A market leader, Fortress Interlocks design and manufacture safety access & control systems. Fortress offer an unrivalled portfolio suitable for applications across a wide industrial base from power generation and distribution, steel, automotive, recycling, building materials, through safeguarding robots and palletisers.

With in excess of 40 years experience in the safety market, Fortress are renown for their innovative design, robust engineering and reliability.

“What we do”

Fortress help customers protect their human and capital assets. We create safe workplaces where employees are safeguarded from injury and plant is protected from damage.

We are world leaders in access control systems, and our products guarantee that actions and events are undertaken in a pre-determined sequence ensuring a safe working environment.

“Total Access & Control”

With the introduction of **eGard**, Fortress can provide “Total Access & Control”, from cost effective general duty access interlocks and simple automation control systems (**eGard**), to the most robust trapped key interlocks (**mGard**) or safety gate switches (**amGard**).

“Why choose Fortress”

Fortress are a solution provider and our extensive product offering and interlocking experience allows us to provide unique solutions for all safeguarding applications. We regularly create bespoke solutions, often by customising our standard products.

Fortress Interlocks

The Global Supplier of Total Access and Control Safety Systems.



NB Our brochure is designed to give an overview of our brand portfolio. For detailed technical information including 2D autocad file downloads, 3D animated product views and specific application information, visit our web site www.fortressinterlocks.com



Winner Queens Award for Export 2008
Winner Queens Award for Innovation 2007

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

By its unique design concept, **amGard** offers a fully integrated safety switch controlled closing and/or locking system, designed for strength and reliability in hazardous operating conditions.

The **amGard** system replaces all adaptations normally fitted within a guarding system. Additional arrangements like actuators/operators, catches, internal release functions, trapped key functions and deadlocks are no longer needed. All of these separate functions are or can simply be incorporated into the **amGard** configurations



Head Modules		<p>Head Modules, Actuators & Cap <i>Handle Actuator & Head Tongue Actuator & Head Lock-Out Clips Slidebars Mechanical Cap (for non door lock configurations)</i></p>		Head Modules
Adaptors		<p>Adaptors & Foot <i>Safety Key Adaptor Access Key Adaptor Internal Release Adaptor Padlock Adaptor Foot (to terminate mechanical lock)</i></p>		Adaptors
Electrical Switching / Locking		<p>Electrical Switching / Locking <i>Safety Switch Bodies Solenoid Controlled Lock Bodies Explosion Proof Switch Bodies</i></p> <p> <i>AS-interface versions available European, Canadian and North American approvals</i></p>		Electrical Switching / Locking
Option PODs		<p>Option PODs <i>Key Switch Option Pod Indicator Lamp Option Pod Pushbutton Option Pod</i></p> <p> <i>AS-interface versions available European, Canadian and North American approvals</i></p>		

Select and Configure your Solutions

The basic assemblies ATSTOP, ATLOK and AMSTOP, AMLOK are only a selection of the configurations to suit basic heavy duty safety gate switch requirements. By selection of optional modules these configurations can easily be extended with the required functions.

amGard composes dual channel safety circuits to allow cross monitoring, the robust stainless steel actuator with a self-adjusting operation provides a long life cycle and reduction of down time and maintenance. Specially designed for harsh environments, the **amGard** range is ideal for use in areas with dust and moisture and is tested to over 1,000,000 operations.

amGard trapped key modules are fully interchangeable with the Fortress **mGard** range of trapped key interlocks.

amGard Application Example I

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

1 CPS2LOK024024B CLIN

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).

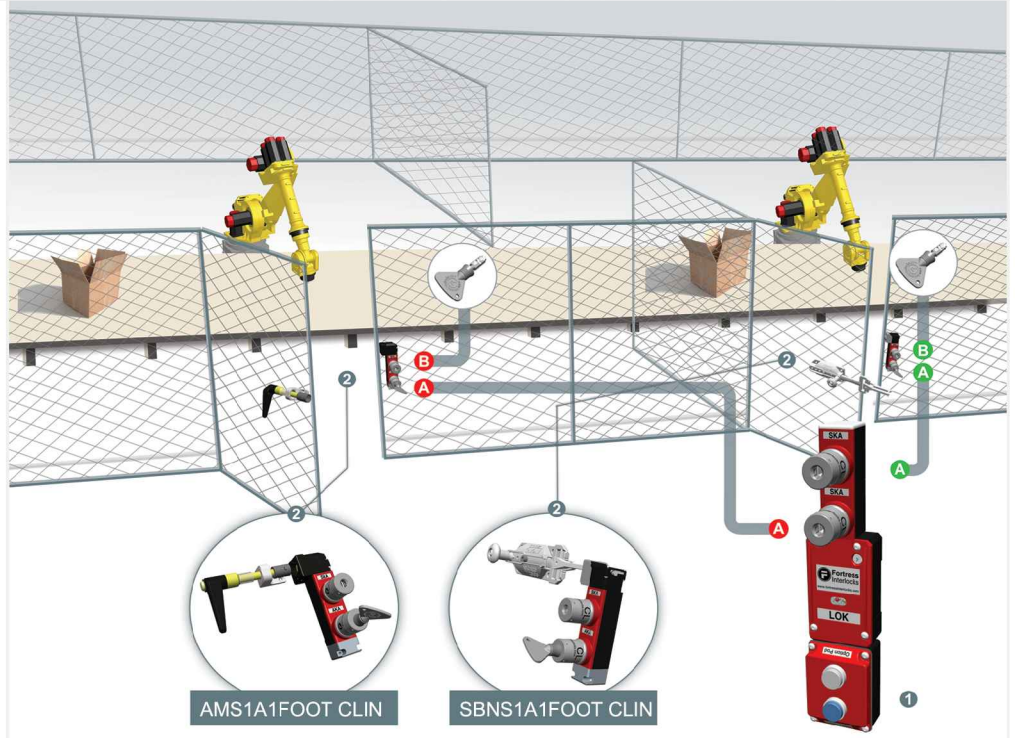
Energising the solenoid breaks the dual safety circuits to prevent unexpected re-start.

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

2 AM & SBNS1A1FOOT CLIN

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.



amGard Application Example II

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

1 SBNLOK024024K CLIN

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.

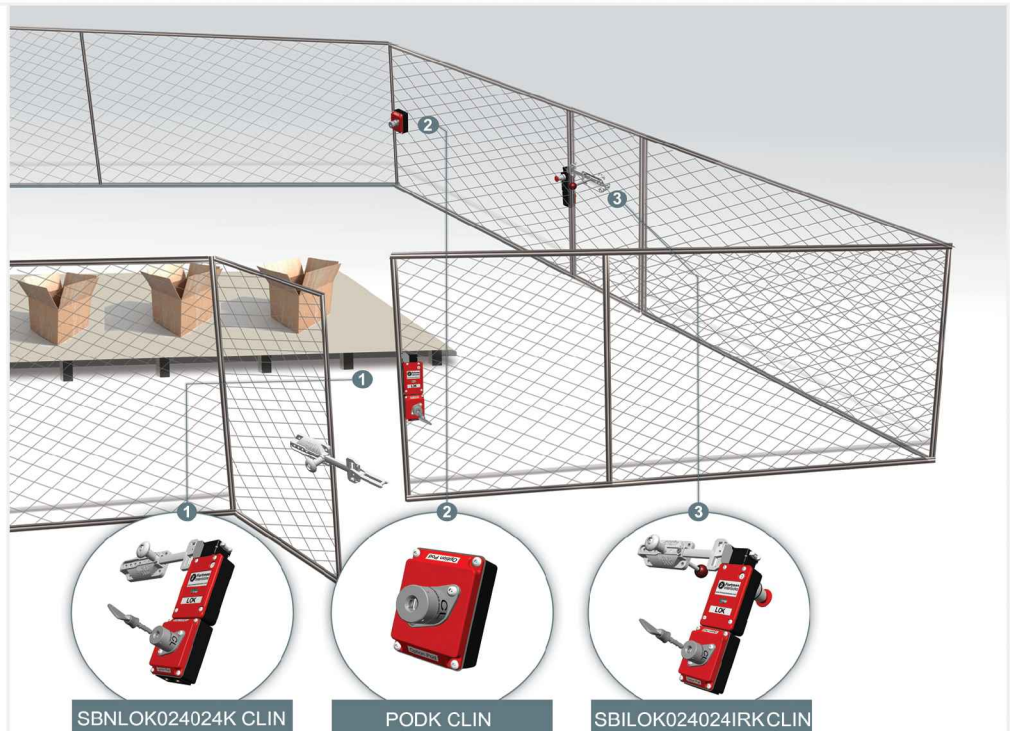
The operator can take the safety key into the potentially hazardous area preventing restart.

2 PODK CLIN

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

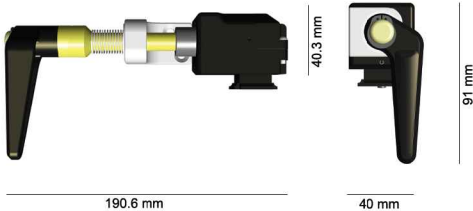
3 SBILOK024024IRK CLIN

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.



Head Modules & Actuators

AM



AM Handle Actuator & Head

- Heavy duty handle unit
- 4 position fixing at 90° increments
- Operating handle can be rotated in 45° increments
- Allows for guard misalignment
- Retention force 2500N
- Can be fitted with lock-out devices for additional safety

Head (AMH) and Handle (AMK) also available separately.

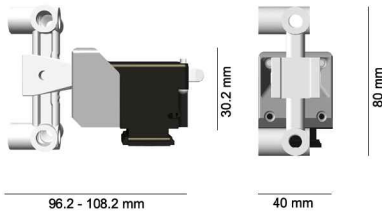
AM Lock-Out Clip

Once inserted into the head and padlocked in position, it blocks the handle entry preventing the door being closed and the machine from being restarted.



AML

AT



AT Tongue Actuator & Head

- Heavy duty tongue unit
- Ideal for fast, frequent access
- 4 position fixing at 90° increments
- Misalignment tolerance of +/- 12mm
- Retention force 2500N
- Can be fitted with lock-out devices for additional safety

Head (ATH) and Tongue (ATK) also available separately.

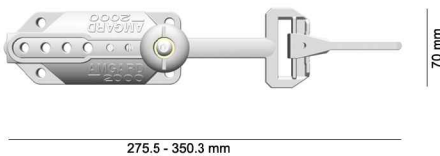
AT Lock-Out Clip

Once inserted into the head and padlocked in position, it blocks the tongue entry preventing the door being closed and the machine from being restarted.



ATL

- SBN** no spring & no internal release
- SBS** spring loaded
- SBI** internal release

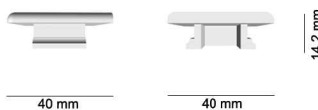


Slidebar

- Used in conjunction with the "ATH head"
- Particular useful for applications using small radius, hinged doors
- Stainless steel casting
- Built in lock-out facility to accommodate a maximum of 4 padlocks with up to 8 mm diameter shackles

Spring loaded version (SBS) is advised when exposed to vibration

CP



Cap

Suitable for use with the adaptor products

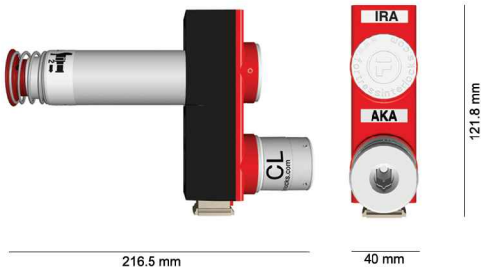
- Protects the unit from debris
- Removable to enable reconfiguration

Hinged door equipped with SBISTOP024 configuration



Adaptors

IRA



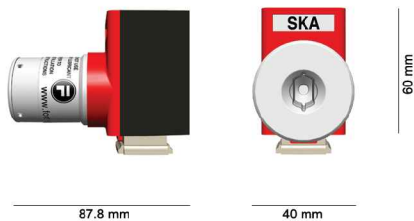
Internal Release Adaptor

Overrides the safety or access key mechanism and provides a means of escape from inside the guarded area.

- If incorporated into a STOP body the internal release mechanism puts the machine into a stop
- Always in combination with A1, S1, LO or LT
- Up to 5 key adaptors in one configuration

*For key and lock specifications view page 22.
Keys must be ordered separately.
Cannot be used in combination with LOK type bodies.*

S1



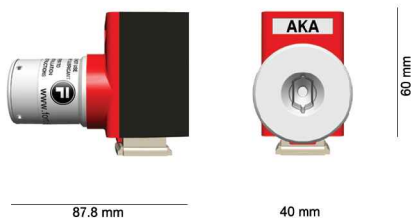
Safety Key Adaptor

This unit ensures that machine/process cannot be restarted without returning the key(s). It can furthermore prevent personnel being accidentally locked inside a guarded area.

- Can be stacked or combined with other adaptors
- Provides unique link to mGard range
- Up to 5 key adaptors (S1»S5) in one configuration

*For key and lock specifications view page 22.
Keys must be ordered separately.*

A1



Access Key Adaptor

Ideally suited for authorised access only, or linked access to other machinery.

- Ensures a specific sequence of operation
- Can be stacked or combined with other adaptors
- Provides unique link to mGard range
- Up to 5 key adaptors (A1»A5) in one configuration

*For key and lock specifications view page 22.
Keys must be ordered separately.*

amGard Application Example III

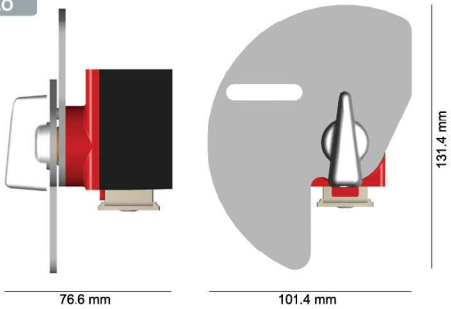
Safeguarding an area where there is no fencing (e.g. an area protected by a light curtain) or, the guarding has mechanical door locks.

This amGard configuration enables personnel to work inside potentially dangerous areas (CPS3LOK02024B CLIN). When no fencing exists personnel always remains responsible for their own safety and the possession of the safety key is their safety guarantee.

Access is requested by pressing the red button on the Option POD module. When the area is safe to enter, the solenoid controlled safety switch is energised and the safety keys can be released in sequence. Personnel can keep these keys with them, to prevent machine restart, or use these to open the mechanical door locks (in case of a fenced area). Only when all keys are back in the safety key adaptors can the machine be restarted.



LO




Single Lock-Out Padlock Adaptor

Provides padlocking only in one position.

- Provides a link with other lock-out tag-out safety procedures
- Accommodates up to 5 padlocks with 7.5mm diameter shackles
- Facilitates enhanced supervisor security

LT

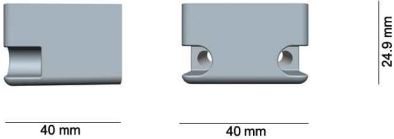


Dual Lock-Out Padlock Adaptor

This unit is equipped with two padlock positions for use as a voluntary lock-out facility.

- Provides a link with other lock-out tag-out safety procedures
- Accommodates one padlock with 8mm diameter shackles
- Enables quick and easy access

FOOT



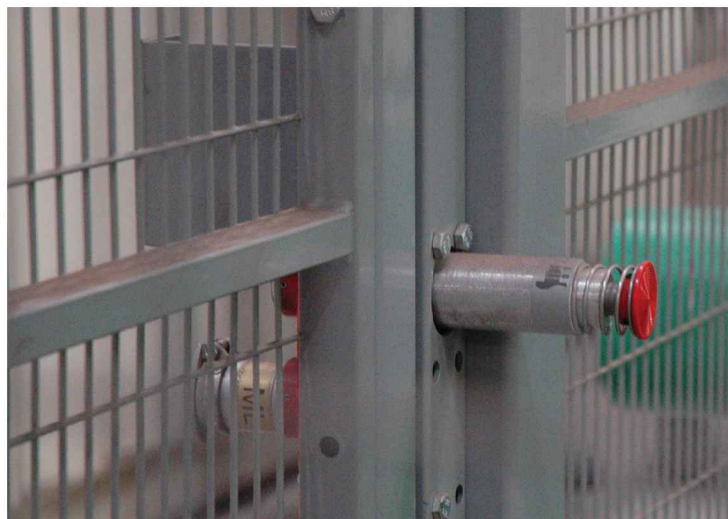
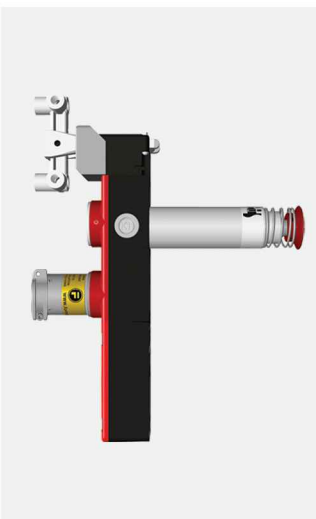
Foot

To terminate all non-switch configurations.

- Secures unit firmly to mounting surface
- Removable to allow for modification

amGard Application Example IV

ATIRA1STOP024 MLIS, a tongue operated safety switch with internal release function requiring access key to be inserted to safely enter the guarded area.



Electrical Switching/Locking

Base units are the electromechanical elements of the heavy duty modular **amGard** range that interface with safety relays and PLC's providing controlled access to machinery or a guarded area. Tested to over 1 million operations these units contain dual channel safety circuitry making them suitable for use in applications up to SIL3 (EN/IEC 62061) Category 4 and PLe (EN/ISO 13849-1).

STOP

40 mm 40 mm 100 mm

Safety Switch Body

The STOP unit breaks the dual safety circuits to select machine stop and/or monitoring access.

- Ideal for quick access to machines with no or short run-down cycles
- Non-solenoid controlled
- LED indicators for status identification
- European, Canadian and North American approvals

STOP AS-i is supplied in a LOK size housing type.

Product Types

Control	Ref N°
24V AC/DC	STOP024
48V AC/DC	STOP048
110V AC	STOP110
230V AC	STOP230
AS-Interface	STOPASI

LOK power to unlock
LOKPL power to lock

43 mm 80 mm 130 mm

Solenoid Controlled Lock Body

Energising (LOK) or de-energising (LOKPL) the solenoid breaks the dual safety circuits to prevent access until machine/area is safe.

- Ideal for machines with run-down cycles
- LED indicators for status identification
- Solenoid override facility for increased safety in the event of power failure (not applicable for the power to lock version)
- Split voltage available on request
- European, Canadian and North American approvals

Product Types

Control / Solenoid	Ref N° LOK
24V AC/DC / 24V AC/DC	LOK024024
48V AC/DC / 48V AC/DC	LOK048048
110V AC / 110V AC	LOK110110
230V AC / 230V AC	LOK230230
Control / Solenoid	Ref N° LOKPL
24V AC/DC / 24V AC/DC	LOK024024PL
110V AC / 110V AC	LOK110110PL
AS-i "power to unlock"	LOKASI
AS-i "power to lock"	LOKASIPL

LOKIR power to unlock
LOKPLIR power to lock

102.8 mm 80 mm 130 mm

Solenoid Safety Switch with Internal Release

This unit is equipped with an additional internal release button for a mechanical override function of the solenoid switch.

- LED indicators for status identification
- Prevents access until machine is safe
- Solenoid override facility for increased safety in the event of power failure (not applicable for the power to lock version)
- Split voltage available on request
- European, Canadian and North American approvals

Product Types

Control / Solenoid	Ref N° LOKIR
24V AC/DC / 24V AC/DC	LOK024024IR
48V AC/DC / 48V AC/DC	LOK048048IR
110V AC / 110V AC	LOK110110IR
230V AC / 230V AC	LOK230230IR
Control / Solenoid	Ref N° LOKPLIR
24V AC/DC / 24V AC/DC	LOK024024PLIR
110V AC / 110V AC	LOK110110PLIR
AS-i "power to unlock"	LOKASIIR
AS-i "power to lock"	LOKASIPLIR

STOPTX ATEX certified
STOPXP UL/CSA certified

72.9 mm 76 mm 171 mm

Explosion Protected Safety Switch Body

STOPTX : ATEX certified product. Heavy duty explosion protected safety gate switch. Suitable for zone 1 & 2 environments.

STOPXP : UL / CSA certified product. Heavy duty explosion protected safety gate switch. Suitable for zone 1 & 2 environments.

Option PODs

Option PODs provide an added control feature for assembled **amGard** units. There are 3 standard types, each serving a specific purpose. Other combinations are available on request.

Option PODs		Key Switch Option POD	Product Types											
<p>PODK</p>	<p>PODL</p>	<p>PODB</p>	<p>Key Switch Option POD</p> <p>The removal of the key enables the machine to stop at the end of a rundown cycle. The PODK can additionally be used separately for teach mode activation.</p> <ul style="list-style-type: none"> • Contains 2NO/2NC contact arrangement • Switch rating 3A • Provides a request to stop/start • Can be used as a "stand alone" key switch • European approval <p><i>For key and lock specifications view page 22. Keys must be ordered separately.</i></p>	<table border="1"> <thead> <tr> <th>Description</th> <th>Ref N°</th> </tr> </thead> <tbody> <tr> <td>Stand alone</td> <td>PODK</td> </tr> <tr> <td>For mounting to LOK module</td> <td>LOKPODK</td> </tr> <tr> <td>Mounted to LOK module</td> <td>K</td> </tr> <tr> <td>AS-Interface</td> <td>PODKASI</td> </tr> </tbody> </table>	Description	Ref N°	Stand alone	PODK	For mounting to LOK module	LOKPODK	Mounted to LOK module	K	AS-Interface	PODKASI
Description	Ref N°													
Stand alone	PODK													
For mounting to LOK module	LOKPODK													
Mounted to LOK module	K													
AS-Interface	PODKASI													
		<p>Indicator Lamp Option POD</p> <p>Ideal complimentary module where multiple interlocks are used for enhanced identification of status.</p> <ul style="list-style-type: none"> • Easy, clear identification of machine status • Can be modified to suit one or two lamps • Standard colours are red and yellow, other colours are available to suit • Illuminated push buttons on request • Combination lamp & pushbuttons units available on request • European approval 	<table border="1"> <thead> <tr> <th>Description</th> <th>Ref N°</th> </tr> </thead> <tbody> <tr> <td>Stand alone</td> <td>PODL</td> </tr> <tr> <td>For mounting to LOK module</td> <td>LOKPODL</td> </tr> <tr> <td>Mounted to LOK module</td> <td>L</td> </tr> <tr> <td>AS-Interface</td> <td>PODLASI</td> </tr> </tbody> </table>	Description	Ref N°	Stand alone	PODL	For mounting to LOK module	LOKPODL	Mounted to LOK module	L	AS-Interface	PODLASI	
Description	Ref N°													
Stand alone	PODL													
For mounting to LOK module	LOKPODL													
Mounted to LOK module	L													
AS-Interface	PODLASI													
		<p>Pushbutton Option POD</p> <p>Ideal for use as an emergency stop or request to start/stop.</p> <ul style="list-style-type: none"> • Request start/stop at the gate • Can be modified to suit one or two pushbuttons • Easy, reliable interface with machine controls • European approval <p><i>No Emergency-Stop available in AS-I version</i></p>	<table border="1"> <thead> <tr> <th>Description</th> <th>Ref N°</th> </tr> </thead> <tbody> <tr> <td>Stand alone</td> <td>PODB</td> </tr> <tr> <td>For mounting to LOK module</td> <td>LOKPODB</td> </tr> <tr> <td>Mounted to LOK module</td> <td>B</td> </tr> <tr> <td>AS-Interface</td> <td>PODBASI</td> </tr> </tbody> </table>	Description	Ref N°	Stand alone	PODB	For mounting to LOK module	LOKPODB	Mounted to LOK module	B	AS-Interface	PODBASI	
Description	Ref N°													
Stand alone	PODB													
For mounting to LOK module	LOKPODB													
Mounted to LOK module	B													
AS-Interface	PODBASI													

amGard Application Example V

ATLOK024024K CLIN

Removal of the key from the pod selects machine stop at the end of a run down cycle. When the solenoid within the connected gate switch has been energised access can be gained. The operator can take the safety key into the hazardous area preventing restart and/or enable teach mode function by using a stand alone Pod (PODK).

This key can also create a link to the Fortress **mGard** range. By inserting this key into **mGard** mechanical door locks used to lock doors inside the guarded area.



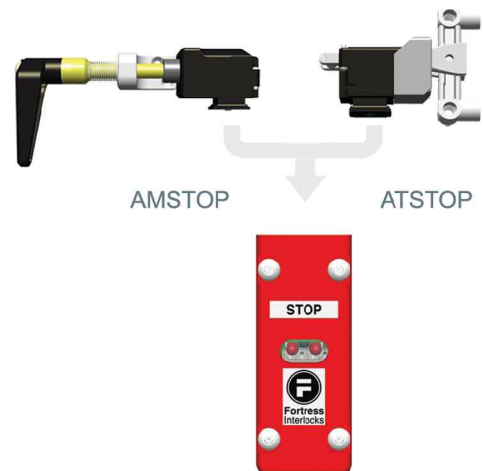
AMLOK024024 & ATLOK024024

The solenoid controlled safety switch body (LOK) 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.



AMSTOP024 & ATSTOP024

The safety switch body (STOP) can be equipped with two different head types. These configurations select machine stop and detect the position of doors/hatches that gives access to the safeguarded area or machine.



AmGard Technical Specifications

Materials	Zinc Alloy to BSEN12844, Stainless Steel to BS3146
Paint Finish	Gloss Powder Coat on Passivated Base Material
Colour	Red, Black and Stainless Steel
Ingress Protection	IP67 (DIN 400050)
Operating Force	0.5N (AT & AM head)
Retention Force Locked	2500N (for all door lock configurations)
Maximum Approach Speed	20m/minutes (for door lock configurations)
Mechanical Life	>1,000,000 Switching Cycles
Maximum Frequency of Ops	7,200/hour
Ambient Temperature	-5°C to + 40°C (mean over 24 hrs = +35°C)
Maximum Wire Cross-Section to fit connector	2.50mm ²
Connector Type	Spring Activated Vibration Proof Block
Switch Conformance	DIN VDE 0660 Part 206 & IEC 647-5-1

Switching Specifications












Switching Principal	Positive Break (safety circuits)
Switch Circuit Current	3A
Switching Voltage	230V AC Max
Switching Contact Element	4NC/2NO (LOK), 2NC/1NO (STOP) and 2NO/2NC (PODK)
Isolating Distance	2 x 2mm per Switch Element
Contact Material	90% Silver and 10% Nickel
Utilisation Category	AC 15 or DC 13
Control Voltage	24V AC/DC, 48V AC/DC, 110V AC or 230V AC
Insulating Resistance	20M 0hm
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, 48V AC/DC, 110V AC and 230V AC
Solenoid Voltage Tolerance	90% to 110% of nominal

Lock and Key Specifications





Fortress locks have over 200,000 different lock combinations. Besides the standard basic (CL) it is also possible to have a master series (ML) lock. The ML lock which can be operated by a special cut master key (MLK-SUGS) that fits any mastered lock in a specific mastered lock series. For ease of use all Fortress locks provide key insertion in two orientations.

Lock and key engravings

Each different key combination is allocated with an engraved code onto the lock and key, of up to maximum 30 characters (3 lines of 10 characters). This engraving code is used to identify locks and keys and is recorded in a database for continuous cross reference. Required engraving details are therefore to be provided with each order.

Standard		CLIN lock Standard CL lock no dustcover		CLIS lock Standard CL lock with stainless steel dustcover		CLSS lock Full Stainless Steel CL lock with stainless steel dustcover		CLK-SUS Standard key for use on all CL lock types	
	Master		MLIN lock Masterable ML lock no dustcover		MLIS lock Masterable ML lock with stainless steel dustcover		MLSS lock Full Stainless Steel masterable ML lock with stainless steel dustcover		MLK-SUGS Standard cut key for use on all ML type locks
			ML lock Masterable ML lock no dustcover		ML lock Masterable ML lock with stainless steel dustcover		ML lock Masterable ML lock with stainless steel dustcover		MLK-SUCM Master cut key for use on all ML lock types

As an option Fortress locks can also be supplied with Padlockable dustcovers, that incorporates two padlock holes which can be fitted with lockout hasps and scissor hasps between 3mm and 8mm in diameter as shown below.

Dustcover Options		CLDC Stainless Steel Dustcover		LOH3 Lock-Out Hasp		LOS3 Lock-Out Scissor Hasp	
		PLDC Stainless Steel Padlockable Dustcover		LOH3C Lock-Out Hasp c/w Cable		LOS3C Lock-Out Scissor Hasp c/w Cable	

Maximum 30 characters (3 lines of 10 characters)

Sample Configurations



ATA1STOP024 CLIS




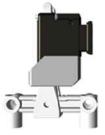




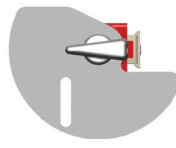
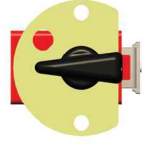






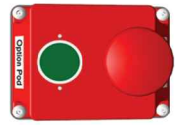
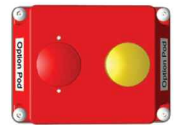
A tongue operated access lock with control switch to safeguard a hatch. Access is only possible after isolation of the machine power, where the access key is released after the machine is switched off.



SBILOK024024IR

A solenoid controlled safety switch with internal release function and a sidebar operated actuator for effective access.

The high ingress protection class (IP67) makes amGard most suitable for any outdoor use (when mounted correctly).

Head Modules		Adaptors		Electrical Switching / Locking		Option Pods	
<p>Cap</p>  <p>CP</p>	<p>Handle Actuator & Head</p>  <p>AM</p>	<p>AM Lock-Out Clip</p>  <p>AML</p>	<p>Tongue Actuator & Head</p>  <p>AT</p>	<p>AT Lock-Out Clip</p>  <p>ATL</p>	<p>Slidebar</p>  <p>SBN SBS SBI</p> <p>No Spring & no Internal Release Spring Loaded Internal Release</p>		
<p>Safety Key Adaptor</p>  <p>S1 S1 » S5</p>	<p>Access Key Adaptor</p>  <p>A1 A1 » A5</p>	<p>Single Lock-Out Padlock Adaptor</p>  <p>LO</p>	<p>Dual Lock-Out Padlock Adaptor</p>  <p>LT</p>	<p>Internal Release Adaptor</p>  <p>IRA</p>	<p>Foot</p>  <p>FOOT</p>		
<p>Safety Switch Body</p>  <p>AS available</p> <p>STOP</p>	<p>Solenoid Controlled Switch Body</p>  <p>AS available</p> <p>LOK Power to Unlock LOKPL Power to Lock</p>	<p>Explosion Protected Safety Switch Body</p>  <p>CE II 2G c</p> <p>STOPXP UL/CSA certified STOPTX ATEX certified</p>					
<p>Key Switch Pod</p>  <p>AS available</p> <p>PODK</p>	<p>Pushbuttons Pod</p>  <p>AS available</p> <p>PODB</p>	<p>Indicator Lamps Pod</p>  <p>AS available</p> <p>PODL</p>					

A HALMA COMPANY



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