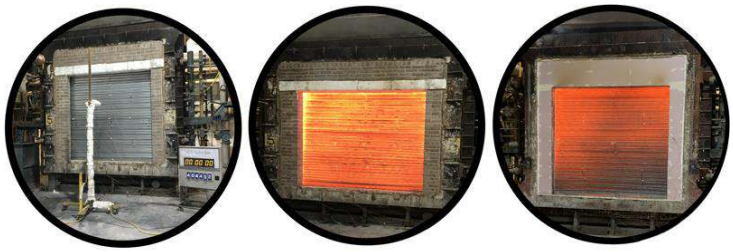
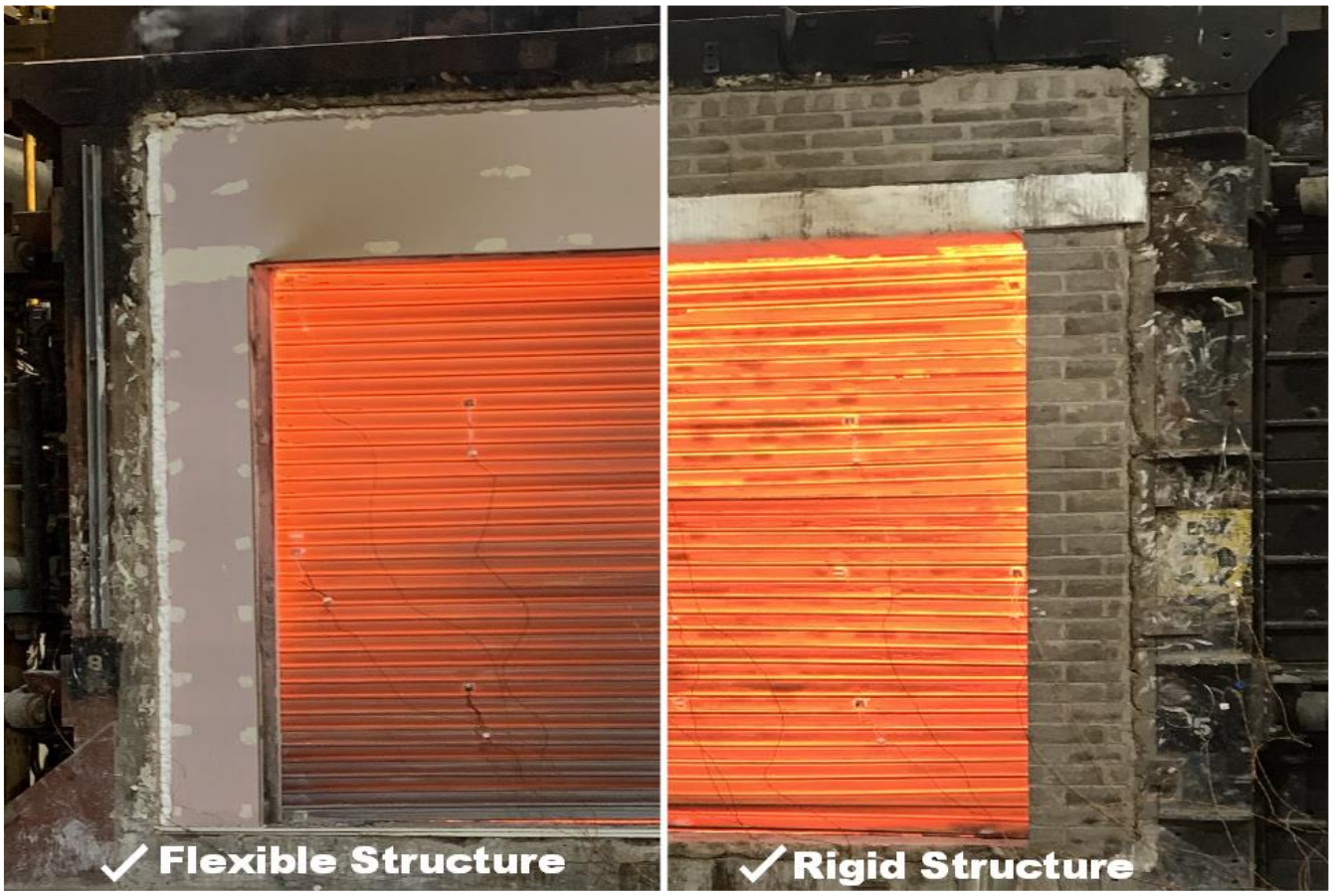
# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE




## FIRE SHUTTERS CE MARKED & CERTIFIED TO EN 13241 & EN 16034:2014

☑ ‘Flexible’ structure tested and verified.
☑ ‘Rigid’ structure tested and verified.
☑ E60, E90, E120 & E240 fire integrity ratings available.
☑ Tubular motor & Inline fire shutters available.
☑ Gravity Fail-safe fire shutter tested and verified.
☑ Nationwide delivery and installation.
☑ Fully compliant to new regulations BS EN 16034:2014

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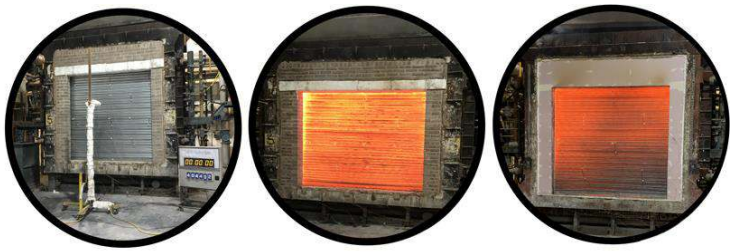
# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## Fire Shutter Legislation & Information:

Manufacturers of roller shutter products and components must supply the correct documentation and assessment data for CE marking to be applicable. It has been a compulsory requirement for CE marking of roller shutters since the introduction of the **Machinery Directive 1995**. As of July 2013, **The Construction Product Regulations 2013** compliance and associated marking became mandatory for doors within the scope of **BS EN 13241:2003+A1:2011**. Doors with fire and smoke resisting characteristics were excluded from the scope at that time, from 2016 the scope was amended to incorporate these characteristics.

Since the 1st of November 2019, new legislation was introduced regarding the manufacturing, testing and installation of fire shutters. It is now a mandatory requirement that all fire shutters must be CE marked to **BS EN 16034:2014** under **the Construction Product Regulations (EU) 305/2011**. The previous standard **BS 476 part 22 (1987)** is now a non-compliant and cannot be sold on the UK marketplace.

The testing methodology for fire shutters has altered slightly, the furnace test (**BS EN 1634-1**) is a compulsory requirement which is observed and recorded by a notified body. A manufacturer of a fire shutter must supply the correct documentation and assessment data so that the product can be CE marking correctly.

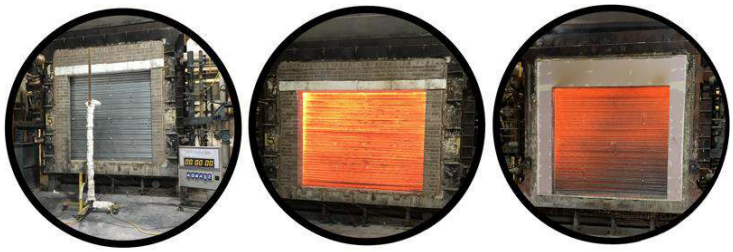
## Will CE Marking still be applicable after the UK has left the EU27?

The CE mark is a conformity mark that is recognized worldwide. Primarily, the CE mark is only applicable within the European Economic Area (EEA). However, some countries also accept CE mark products due to the manufacturer's declaration which states the product meets the EU standards for health, safety and environmental protection requirements. The CE mark is not a quality indictor for the product(s) or a certification mark.

As a result of the **United Kingdom's referendum in 2016**, which took place on the 23rd of June 2016. The United Kingdom and Gibraltar asked the electorate whether the country should remain within the European Union as a member state or leave. The people of the United Kingdom voted to leave the European Union.

All CE marked fire shutters manufactured within the United Kingdom will be recognized and legally compliant up until the end of the transition period. Once this date has passed, it will be necessary for fire shutters to be UKCA marked. All notified bodies, such as **WarringtonFire**, within the UK which were previously EU notified bodies will no longer be recognized. They will however be recognized as UK approved bodies and will be able to provide UKCA marked certification.

# FLAME ARMOUR



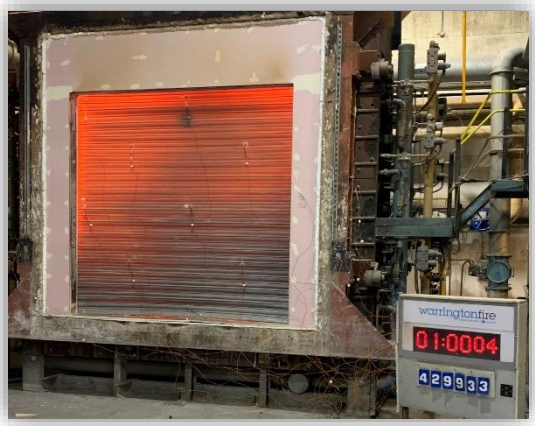
# FIRE SHUTTERS BROCHURE

## CERTIFIED TO INSTALL ON BOTH 'FLEXIBLE' AND 'RIGID' STRUCTURES.

The current regulations **BS EN 16034** state that if the manufacturers original test specimen is tested to a 'rigid' structure (steel or masonry), an additional separate test is required for fixing to 'flexible' structures (timber stud or drywall). As stated in the Extended Application Report **BS EN 15269-10** on page 35 (section J.1.2), the standard clearly states that rigid to standard flexible is "**NOT POSSIBLE WITHOUT ADDITIONAL TESTING**". As a result of this, the Flame Armour Fire Shutter was further tested to **BS EN 1634-1** on a flexible structure on Tuesday 7th July 2020, at WarringtonFire.

### ✓ RIGID STRUCTURE TESTED

On 8th February 2019, the Flame Armour Fire Shutter was tested to **EN 1634-1** at WarringtonFire Test Facility. The original specimen was tested to a rigid structure. As a result of this, any fire shutter manufactured at that time could only be installed on masonry or steel structures. The image on the right is a photograph taken of the Flame Armour Fire Shutter being tested to a masonry structure.




### ✓ FLEXIBLE STRUCTURE TESTED

On 7th July 2020, the Flame Armour Fire Shutter was once again tested to **EN 1634-1** at WarringtonFire Test Facility. The fire shutter was manufactured to be an identical copy of the original test specimen. However, the fixing structure was altered to a flexible structure. The image on the left is a photograph of the Flame Armour Fire Shutter being tested to a timber stud and fire-resistant plaster board structure.

All manufacturers of **fully CE marked** fire shutters to **BS EN 16034** are aware of the **additional testing required** of **BS EN 15269-10**, which states testing data for both '**Flexible**' and '**Rigid**' structure is **mandatory**. **Failure to provide evidence** is proof of a **non-compliant fire shutter.**

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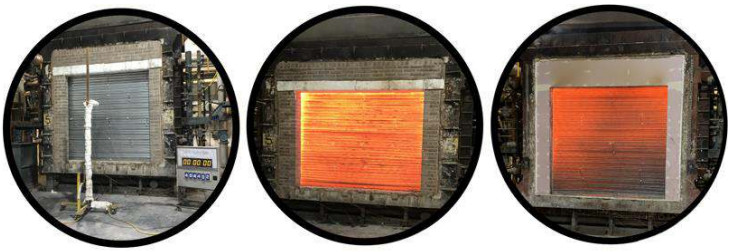
# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## The Stages of testing the fire shutter:

On 8th February 2019, the Flame Armour Fire Shutter was tested to **EN 1634-1** at WarringtonFire Test Facility. The fire shutter was installed on a masonry structure (rigid structure) and all the necessary pre-testing was completed. This included a compulsory cycle test which was completed to ensure the operability of the fire shutter remained uncompromised. This also included an 'open' and then 'close' cycle test on 'stored energy' from a battery backup.

**STAGE ONE – EN 1634-1 FURANCE TEST**

Once the Flame Armour fire shutter was installed on the masonry testing structure, the furnace was ignited. The sensors recorded the performance, temperature and radiation levels of the fire shutter throughout the duration of the test. Once the fire shutter has surpassed the one-hour testing period, it achieved the minimum rating of E60.

If a fire shutter fails to achieve a rating, then the manufacturer must make the necessary design alterations and retest. Full charges still apply, no documentation is provided for a failed test and the manufacturer must start the whole process again.

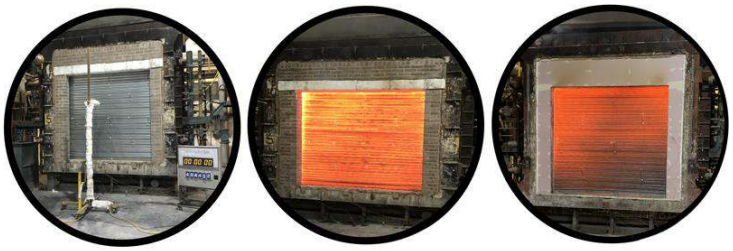
**STAGE TWO – INTEGRITY RATING VERIFIED**

After a four-hour period, the Flame Armour fire shutter had surpassed the maximum fire-resistant for a roller shutter. The Flame Amour fire shutters can be manufactured with the following integrity rating:

(E60) 60-minute fire resistant rating.
(E90) 90-minute fire resistant rating (Timber only).
(E120) 120-minute fire resistant rating.
(E240) 240-minute fire resistant rating.

The test specimen was manufactured to 2400mm clear opening width x 2400mm clear opening height. For larger fire shutters applications, it is necessary that they are manufactured to the guidance stated in the **Extended Application Report BS EN15269-10**. This documentation is provided by the notified body and is accompanied with the certification. `

# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## Fire shutter specifications:

The original test specimen was designed as a tubular motor fire shutter, this means that the motor was located internally within the coil casing. Once the fire shutter has been furnace tested (**BS EN 1634-1**), then the notified body produces an Extended Application Report (**BS EN 15269-10**) which provides the manufacturer with information based on calculations from the testing procedure. Due to the limitations of the size of the furnace, it is not possible to test fire shutters for larger applications. The Extended Application Report resolves this issue and allows the manufacturer to create a fire shutters which is greater than that which was originally tested.

To manufacturer a fire shutter, a measurement of the clear opening sizes is required. This is the measurement of the opening where the fire shutter needs to be installed. It is possible to install a fire shutter in a reveal or directly onto the wall. These measurements need to record by a competent site surveyor or engineer.

The type of fire shutter required depends on key variables such as the dimensions of the opening, fire rating required and the electrical supply on site.

### FIRE SHUTTER DIMENSIONS:

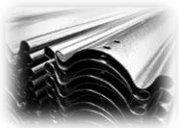
A standard tubular motor can be manufactured to the **minimum clear opening size of 600mm**. However, a **Gravity fail-safe fire shutter** can be manufactured to a **minimum clear opening size of 300mm**. The Extended Application Report allows the manufacturing of up to **10'000mm clear opening width** or **height**.

### FIRE RATINGS:

Depending on the structure which the fire shutter is being fixed upon depends on the ratings available.
E60, E120 and E240 Integrity rating for Rigid structures.
E60 & E90 Integrity rating for Flexible structures.

### OPERATION TYPE & SAFE BRAKE:

240 Volt (Single Phase Tube Motor)
415 Volt (Three Phase Inline Motor)
Auto Solenoid Release
RSB0, RSB1/2, RSB2/3 & RSB4 Safety Brakes

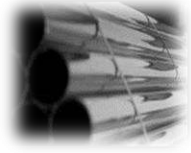


### CURTAIN (LATH):

Constructed from 75mm wide curved interlocking galvanised steel 22swg solid, complete with cast end locks.

### GUIDE (CHANNELS):

Depending on the dimensions of the structural opening, results in the type of guide required. Standard fire shutters use 65 x 2.5mm guide channel.



### BARREL:

The Extended Application Report provides clear guidance on the barrel type required, depends on the size of the clear opening width and height.

### ANGLE:

Constructed from 75mm x 50mm x 5mm steel angle complete with punched slots to allow for expansion during fire conditions.

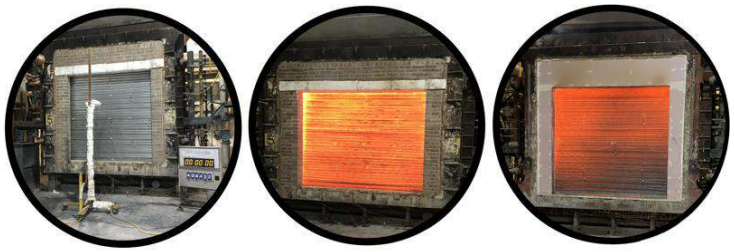
### END PLATES:

Depending on the dimensions of the structural opening the specifications stated in the Extended Application Report.

### CANOPY (COIL CASING):

The Canopy is the width of the shutter and same shape of the end plate, complete with a punched 50mm top lip for allowing expansion.

# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## Types of fire shutter:

There are two main types of fire shutters, tubular motor and conventional inline fire shutters. However, it is also possible to offer a unique product which has been tested and verified to self-close in the event of a power failure. This unique fire shutter is referred to as a Gravity fail-safe fire shutter. The motor used for this unique application is commonly found within a fire curtain and is required to close in the event of loss of electrical power.

### TUBULAR MOTOR FIRE SHUTTER

This fire shutter is manufactured with a single-phase motor internally fitted to the barrel, it is designed to be smaller, ideal for applications with limited space and size. It operates through a powered-down device that requires a battery backup with mains supply to function. A tubular motor fire shutter is supplied with a UPS-FDI panel to receive a volt-free signal from the fire alarm to close on activation.

Tubular motor fire shutter
***Manchester University***

### INLINE (EXTERNAL MOTOR) FIRE SHUTTER

A conventional fire shutter previously operated by an external motor system. This is referred to as an inline fire shutter due to the motor being inline with the plate wheel on the shaft of the barrel. Manufactured with either a single-phase or three-phase motor which are fitted externally to the coil casing and chain-driven. These types of fire shutters are often used for larger applications. They can link with an auto-solenoid release and fusible backup, however on single phase applications they can also be accompanied with a battery backup system. Power is not required for these shutters to activate in the event of fire, this is due to the shutter being in the 'open' position, allowing it to make a controlled descent when the thermal, fusible link is triggered.

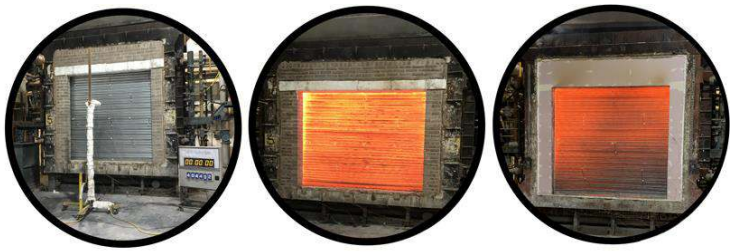
Stainless Steel fire shutter
***McDonald's Food Factory***

### GRAVITY FAIL-SAFE TUBULAR MOTOR FIRE SHUTTER

Unlike typical tubular motor systems, a gravity fail-safe tubular motor fire shutter is manufactured with an internal 24DC volt brake that is electrically powered in the 'close' position. The key feature of this type of fire shutter is how it operates in the event of a power failure, should power supply be compromised this fire shutter will begin a gravity-controlled descent, compartmentalising a building and preventing the spread of fire. This unique type of fire shutter provides an additional fail-safe, ensuring that it still operates as intended and activates even when components of the fire shutter have been compromised. This product is ideal for serving hatches in kitchens where the fire shutter must close in the event of a fire.

Gravity Fail-Safe Fire Shutter
***In-house testing without power***

# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## Ancillaries:

Depending on the type of fire shutter required, the following components are either a requirement or an additional component for the fire shutter.

### FDI-UPS CONTROL PANEL:

The is designed as a fire shutter interface panel with low voltage for tubular motors. It can be connected to a sleep-mode battery backup for a prolonged standby time. This is only compatible with single phase inline and tubular motor fire shutters.

### BATTERY BACKUP:

A standard battery backup provides approximately 4 hours of continual power to the fire shutter in the event of a power failure. A sleep-mode battery backup can offer up to 30 days of standby time. Only compatible with single phase motors.

### FDI LITE – AUDIO VISUAL PANEL:


This audio visual is accompanied with a 90dB sounder. Operated by either membrane buttons or external controls. Delay timer functionality of up to 196 seconds settings. Door closing in the event of a fire via the fire alarm conformation relay (signal) or local heat detector.

### FIRE ALARM INTERFACE CARD:

The fire alarm interface card connects into the power manager battery backup and monitors the fire alarm system directly. If a fault occurs on the fire alarm, the card will activate the battery backup and operates the fire shutter to either ‘open’ or ‘close’.

### FCP01 – AUDIO VISUAL PANEL:


This control panel has an audio-visual warning which can be accompanied with a repeater panel for an adjacent wall. An audible alarm and LED visual warning is triggered when the fire alarm signal is received. Tubular motor fire shutter only.

### EMERGENCY BUTTONS:


Emergency ‘break glass’ push buttons or emergency ‘door release’ buttons can be connected to the FCP03 panel. It is also possible to connect an emergency palm / foot button for a powered ‘open’ or ‘closed’ functionality.

### FCP03 – AUDIO VISUAL PANEL:

This control panel has audio visual warning with LED visual indicator. Fully configurable system compatible with solenoid release mechanism, powered close & two stage closing. Self-contained batteries to release solenoid in the event of power failure.

### SMOKE & HEAT DETECTOR:

Escape routes it is necessary that a local detector is near the fire shutter. Triggered by either heat, smoke or both the sensor will activate the fire shutter to close. This is ideal for ensuring that all personal have evacuated the building prior to the closure of the fire shutter.

### LOCKABLE, TEST & RESET PUSH BUTTON:

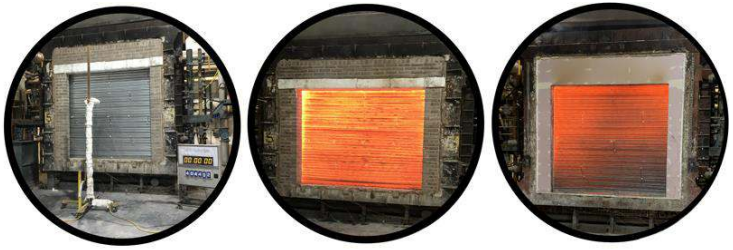
This device allows the trained user to isolate the controls functionality, locally simulate a test of the fire alarm system and reset the fire shutter to the intended position. It was a requirement of BS 7273-6 (Section 11.C) and is purposely designed for fire shutters.

### POWDER COATING:

We offer in-house powder coating to all British Standards (BS) and RAL colours. For bespoke powders it will incur an additional cost. Using advanced anti-corrosive technology, we apply powder coating over hot-dip galvanised steel.

The requirement for providing audio visual warning is referenced in **BS EN 12604, 4.9** and **The Supply of Machinery (Safety) Regulations 2008**, Annex 1 clause 1.2.2. The installer is liable and must justify the risk assessment if omitting to install an audio visual

# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## Gravity fail-safe fire shutter:

The Flame Armour gravity fail-safe fire shutter is designed to operate even when the electricity supply is compromised. This is due to an internal 24DC brake within the motor which holds the shutter in the 'open' position, releasing on a fire alarm signal or in the event of a power failure. On released, it operates on a controlled gravitational descent. This control panel is an audio-visual panel and has a built-in battery backup. This panel offers a two-stage closing, powered and delayed descent operation.

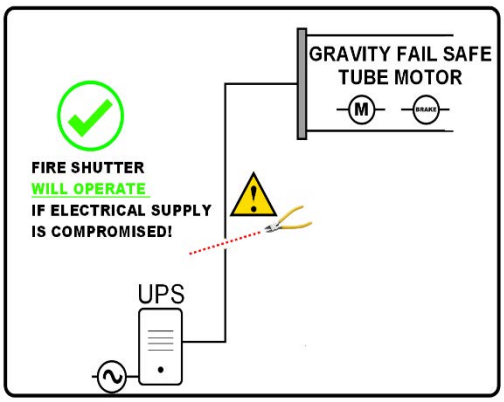
Example of electrical fire on a consumer unit.

The control panel which is supplied with the 'Flame Armour' gravity fail-safe fire shutter motor continuously monitors the closed alarm input terminals. If the terminal is 'open', either by the triggering of the fire alarm or via a forced test then the fire shutter will close. This will be either by a powered descent or by gravity to a fully closed position.

If the battery backup unit (BBU) or universal power supply (UPS) is damaged or faulty, then no power is being transferred to the motor. With this type of fire shutter, a controlled descent will activate within approximately 30 seconds the door will be fully closed, containing the fire.

**A GRAVITY FAIL-SAFE FIRE SHUTTER OFFERS A REASSURANCE THAT THE FIRE SHUTTER WILL OPERATE REGARDLESS OF A BATTERY BACKUP FAILURE OR COMPROMISED WIRING.**

The Gravity Fail-safe motor has been tested and successfully passed to **BS EN 1634-1** at WarringtonFire. Under current regulations **BS EN 16034**, this motor can only be included within a fire shutter/fire curtain that has been tested with that motor type. Other manufacturers of fire shutters will still be required to have an additional test to use this component of a fire application.




- ✓ Lifting capacity of up 80KG
- ✓ Operates a descent without electrical power
- ✓ Built-in battery backup (up to 96 hours)
- ✓ Delay before descent settings
- ✓ Audio visual warning
- ✓ Tested by WarringtonFire (WF Report No. 429933)

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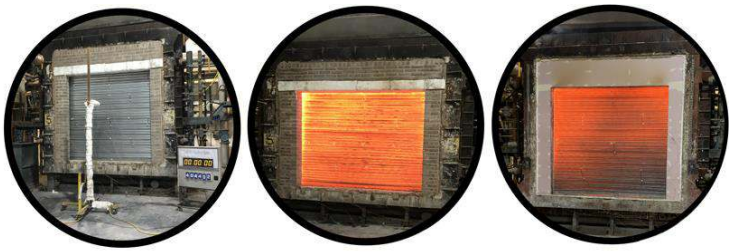


# FIRE SHUTTERS BROCHURE

## What documentation should be provided with a compliant fire shutter?

Unfortunately, there are still companies that are selling fire shutters which are manufactured to the non-compliant standard BS 476 Part 22, these fire shutters cannot be CE Marked. Before you enquire for a quotation for a fire shutter, it is advised that you request the following documentation:

- ✓ The company's certification by a notified body (states BS EN 16034)
- ✓ The Declaration of Conformity
- ✓ The Declaration of Performance
- ✓ An Installation Manual for Supply only customers.
- ✓ CE Marking documentation
- ✓ Instructions documentation

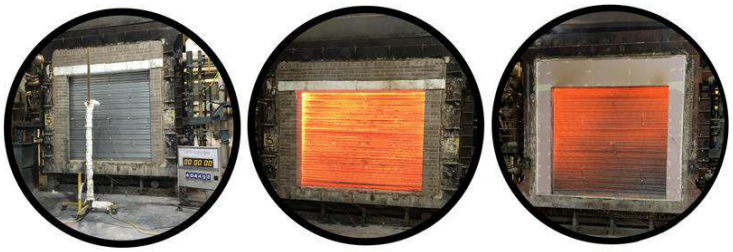

The new regulations state that the manufacturer must always label their product for liability and traceability purposes (in accordance with Construction Products Regulations (EU) 305/2011). Failure to provide the following documentation is evidence that the company are manufacturing non-complaint and unsafe fire shutters. This labelling my not be apparent on first observations, for example, the Flame Armour Fire Shutter label is often located inside the endplate.

## What happens if a manufacturer continues to sell fire shutters to BS 476 part 22?

It is illegal to manufacture and sell fire shutters to the previous standard BS 476 Part 22. Companies are breaking the law and are subject to the penalties for manufacturing and selling a faulty, unfit for purpose product. These fire shutters would not be correctly manufactured, or CE marked correctly and therefore are endangering life as a fire shutter is a life safety critical product. Any company that decides to not adhere to the new legislation and standards, by omission or otherwise would be directly violating the law. Failure to comply to the new standard BS EN 16034 and correctly CE mark a fire shutter is liable for damages.

Furthermore, a contractor/supplier would be in breach of JCT/NEC contractual agreement if they proceeded to install a non-CE marked fire shutter. The regulations states that installation of illegal fire shutters by an employer into the UK Marketplace is an infringement of Provision and Use of Work Equipment Regulations (1998). Health and Safety Executive and Trading Standards are currently investigating companies which supply these non-complaint fire products.

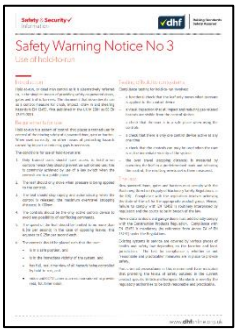
# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

## When does a fire shutter require an audio-visual control panel?

To elaborate on why an audio-visual control panel is required. It is necessary to clarify the regulations and safety features which are required on standard roller shutters. The Door and Hardware Federation (DHF) have published Safety Warning Notice No 3, which provides guidance and best practice for industry and further clarifies the requirement of safety devices on all roller shutters, industrial doors, doorsets, gates and barriers.


Safety Warning Notice No 3

The general consensus within the industry and summarised within Safety Warning Notice No 3 explains the legal requirement of safety devices, for example photocells and safety edges, for automatic closing or opening functionality.

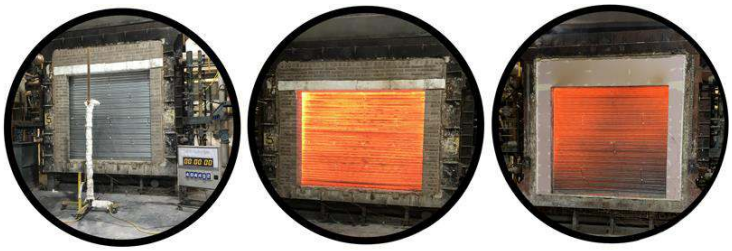
These safety devices detect any obstructions within or around the opening and ensure that in the event they are obstructed they cease to operate. This drastically reduces the risk of harm or potential for a fatality to occur as the safety devices activate immediately. However, a 'Hold-to-run' system of control places the trained user in control of the moving safety of a powered door, gate or barrier. When utilised correctly, no safety devices are required as the trained user will identify any risks prior to operating and is the responsible person. It is illegal to supply, install and commission a powered door, gate or barrier which is automatic operation if there are no safety features

In contrast to this, a fire roller shutter does not require these safety features as they are designed to operate solely in the event of a fire. An audio-visual panel can allow for a delayed, controlled descent which ensures the building has been evacuated prior to operation.

A fire roller shutter is required to operate by either the fire alarm system, or, as well as, a local heat detector. If the fire shutter is above an escape route, it is mandatory requirement that it is connected to a local heat detector which only operates when the heat from a flame is detected.

The fire shutter will automatically open or close in the event of a fire alarm being triggered. If an audio-visual warning has not been installed then this will occur instantaneously and, in some cases, this will pose immediate danger for persons in the local vicinity as the fire shutter will fully close without safety devices. Therefore, if a person is unaware of the fire shutter descending due to the lack of audio and visual warnings, or due to impairment of hearing as stated in the Building Regulations Approved Document B Vol 2:2019 (Section 1.15) then they are at a higher risk of injury, or even risk of a fatality. Ultimately, this leaves the installer of the fire shutter the liable party.

# FLAME ARMOUR



# FIRE SHUTTERS BROCHURE

The Door and Hardware Federation (DHF) have published a 'Frequently Asked Questions' document which elaborates upon key questions asked by members in regards to fire roller shutters. As referred to in FAQ 14, the advice provided states the following, *'it is a matter of local risk assessments but, in most cases, as the door will close without warning, yes [an audio visual is required].'*

To clarify when it is mandatory for a fire shutter to be installed with an audio-visual warning, the following regulation BS EN 12604:2017+A1:2020 provides clear guidance and parameters for contractors. The below extract has been taken from Section 4.9 of BS EN 12604.

### 4.9 Additional requirements for doors operating by gravity or other self-closing mechanism

Doors operating by the use of gravity or self-operating mechanism shall not expose any person being crushed or entangled to forces causing injury or damage.

The operating speed of doors which operate solely by gravity shall not exceed 0,3 m/s. The force of the door impacting the human body or part of it shall not exceed 200 N. If this is not possible, then an audio-visual warning device shall be fitted to the door which acts immediately the door begins to close.



On a structural opening of 1000mm wide by 1000mm high, the suspended curtain weight is ≈18kgs which is below the mandatory requirement of an audio-visual panel. However, if a fire shutter exceeds 200N of force which is approximately 20.4 kilogram-force then legally the contractor (installer) must provide an audio-visual warning. It is not the manufacturers responsibly; liability is solely on the contractor who installed the fire shutter.

## Does a fire shutter require a 'Lockable', 'Test' & 'Reset' push button station?


A lockable, Test and Reset push button station is purposely designed for fire roller shutters. This component allows the trained user to isolate the controls by enabling or disabling the unit's functionality. Using the secondary key switch, a user is capable of locally simulating a fire alarm signal by holding the key in the 'down' position. Once a full simulation has been completed, the user can turn the secondary key switch to the 'up' position and reset the fire shutter. Designed to comply with current regulations (BS 7273-6) which states that a fire shutter must be able to locally simulate the operation of a fire alarm for testing purpose.

BS 7273-6 (Section 11.C) - *'The purpose of this test facility is to enable routine testing of the interface between the fire detection system and the shutter or curtain assembly without the need to employ the services of a specialist contractor or to test-operate any fire detector'.*