FLAME ARMOUR FIRE SHUTTER - STRUCTURAL RECOMMENDATIONS:

The Flame Armour Fire Resistant Roller Shutter has been tested in accordance with the standard BS EN 1634-1: 2014 + A1: 2018. To cover larger applications and variations in scope, the extended application process has been carried out in conformity with BS EN 15269-1: 2011. This document is produced by the laboratory which undertook the initial testing and outlines the applicable scope and product variations (rules) stated within Extended Application standard. As outlined within WF Extended Application Report No. 416673, the primary scope is based upon WF Test Report No. 404452, with the additional test to an identical specimen installed into a timber stud partition to support this alternative wall type and use of alternative tubular motor.

The classification of fire resistance performance in accordance with EN 13501-2 is stated within WF Classification Report No. 416674. This document is available at request of the manufacturer and can be used to provide evidence of compliance for the scope of certified product.

The manufacturer of the certified product cannot advise on the suitability of supporting construction, location of the installation, or provide design guidance for the structural opening. Please liaise with the appropriate qualified persons, such as a Building Control Officer, Approved Fire Officer, or an Structural Engineer.

Summary of Supporting Test Evidence:

WF Test Report No. 404452

- Installed onto fire exposed face of masonry wall
- Achieved 260 minutes Integrity performance
- Classified for Integrity performance for periods of E60 / E90 / E120 / E240.

WF Test Report No. 429933

- Installed onto fire exposed face of a timber stud partition
- Achieved 103 minutes integrity performance
- Classified for Integrity performance for period of E60 / E90

STRUCTURAL RECOMMENDATIONS:

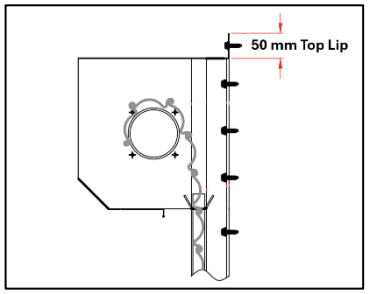
As per the manufacturers Extended Application Report (No. 416673), the Flame Armour Fire Resistant Roller Shutter is covered for installations to a ‘rigid’ supporting construction (i.e. Masonry/Concrete wall) or a ‘flexible’ supporting construction (i.e. Timber Stud Partition). These structural types are defined within BS EN 1363-1: 2020 which is the general requirements standard for fire resistance tests.

It should be noted that the applicable supporting construction must have an equal or greater fire resistance rating than the fire-resistant roller shutter. The substrate must also be capable of supporting the fire-resistant roller shutter for the period of fire resistance required and should not compromise either the integrity of the fire-resistant roller shutter, or separating fire-resisting element itself.

During the initial site survey, the surveying engineer is responsible for ensuring that the structural opening is suitable for both fire resistance applications and will also be capable of supporting the imposed load of the roller shutter assembly, for both fire and non-fire conditions. The manufacturer has included the approximate weight of the fire-resistant roller shutter which is stated on the manufacturer’s product drawing.

Prior to proceeding, considerations for these imposed loads by the various components of the fire-resisting roller shutter must be considered. Particularly, for larger applications which specified heavier and thickness critical components (i.e. barrel, axle, endplate, bolts and curtain). To manufacture a compliant fire resistance roller shutter, which is covered within the scope of the Certificate of Constancy of Performance (CoCoP), the manufacturer must use the critical components specified within Extended Application Report for the dimensional requirements, fire-rating and substrate specified upon initial enquiry.

The permitted opening sizes and component specifications are stated within WF Extended Application Report No. 416673. This document includes tables which detail the critical components required to meet the specifications of the initial enquiry. These calculations have been undertaken in accordance with Annex B of EN 15269-10: 2011. The manufacturer must adhere to these specifications in order to manufacturer a fire resistance roller shutter assembly which is within the scope of certification. Any deviation from the tested specification(s), must be covered within the Extended Application report.



As shown in this diagram, the Flame Armour fire resistant roller shutters canopy (hood) includes a 50 mm top lip above the shutters headbox. This lip incorporates the fixings for the canopy and is a critical aspect of the installation process. It is recommended by the manufacturer that the installer ensures sufficient clearance is provided to ensure that the 50 mm top lip can be installed without being impeded. Additional fixing points within timber stud partition must be taken into consideration. Alternative canopy shapes are permitted as per rule F.1.8 of EN 15269-10, please contact the manufacturer for further details.

As shown within Figure C.1 of EN 15269-10, the example given for the general arrangement of the fire-resistant roller shutter shows the fire shutter installed at full height, with the bottom rail situated at the notional floor level. Therefore, the manufacturer recommends that all fire shutters are installed at finished floor level.

The manufacturers Extended Application Report (WF Report No. 416673) states the following supporting construction and clear opening dimensions of covered under the Certificate of Constancy of Performance.

Supporting Construction Type:	Masonry, Concrete or Protected Structural Steel
Acceptable for up to:	240 minutes (E240) Integrity performance
Maximum Applicable Dimensions:	
E60 Integrity Performance:	10000 mm clear opening width x 7000 mm clear opening height
E120 Integrity Performance:	10000 mm clear opening width x 6300 mm clear opening height
E240 Integrity Performance:	8000 mm clear opening width x 3600 mm clear opening height

Additional Note: *It is possible to install into a standard rigid supporting construction, as tested within WF No. 404452, or to install into a 'Protected Structural steelwork' subject to specified conditions referenced within Section J.2 of the BS EN 15269-10.*

Supporting Construction Type:	Timber Stud Partition
Acceptable for up to:	90 minutes (E90) Integrity performance
Maximum Applicable Dimensions:	
E60 Integrity Performance:	7000 mm clear opening width x 7000 mm clear opening height
E90 Integrity Performance:	7000 mm clear opening width x 7000 mm clear opening height

Additional Note: *The tested supporting construction within WF Test Report No. 429933/R included C16 Timber studs with a sectional size of 100 mm wide x 45 mm deep, cladded with two layers of Gypsum GTEC Fireboard of 15 mm thickness. The manufacturer recommends that if the Flame Armour fire shutter is installed into a timber stud partition, then the same thickness and quantity of layers of fire boarding must be utilised.*

The Flame Armour fire resistant roller shutter cannot be installed into the following supporting constructions:

- Standard (non-fire rated) plasterboard
- Insulated panel walls
- Metal stud partition walls
- Plastic lined wall
- Whitewall™ partitions

PROTECTED STRUCTURAL STEEL:

As detailed within the standard BS EN 15269: 2011, the '*Extended application of test results for fire resistance and/or smoke control door, shutter and openable window assemblies including their elements of building hardware: Part 10, Fire resistance of steel rolling shutter assemblies',* in conjunction with the manufacturers Extended Application Report (WF Report No. 416673), subject to conditions outlined below, it is possible to permit the installation of the fire resistant roller shutter into a protected structural steel supporting construction.

Extract of Extended Application Report No. 416673 (Rule J.2.1):

J.2 Modified Supporting Construction		
J.2.1 Change from standard supporting construction to protected structural steel supporting construction	Possible providing the following applies: a) Structural steel section factor, A/V must be less than 230m^{-1}. Section factor to be calculated assuming section is exposed to fire on all four sides. The section factor shall be calculated as described in EN 13381-4 and EN 13381-8. This rule applies to both the vertical and the horizontal steel sections of the support frame. b) Fire protection system must have been shown by test to EN 13381 to maintain the steel temperature 400°C or less to retain strength and minimise the effects of expansion in the steel section. c) The fixings securing the door to the structural steel shall be in accordance with the appended tables and must be fabricated from steel and designed not to reduce the fire performance of the steelwork fire protection system in ambient conditions or in fire conditions.	Possible to install into standard rigid supporting construction (as tested) or to install into protected structural steelwork subject to specified conditions. Also possible to install into timber stud wall for up to E90 only, as tested under WF No. 429933

To satisfy the requirements for the installation to a protected structural steel supporting construction, which is a variation from the original tested design, the applicable rule J.2.1 of EN 15269-10 must be satisfied in its entirety. To ensure that compliance is achieved, the involvement of a specialist (Passive Fire Protection) structural engineer and steelworks manufacturer is required.

The manufacturer of the structural steel will be able to provide the applicable test evidence for their product with information regarding the necessary Fire Protection system (e.g. fire-resistance boards, cementitious or intumescent sprays, etc) required to satisfy the criteria above. These fire protection systems must be tested in accordance either EN 13381: Part 4 or Part 8.

DIRECTION OF EXPOSURE

As specified within the test standard BS EN 1634-1:2014 + A1: 2018, Section 13.4.2, the type of doorset and direction of exposure can permit the scope for the opposite orientation of exposure subject to conditions. As detailed within Table 2 of this section, for roller shutter assemblies, the test standard states that if the *'barrel and supporting components fixed on the face of the supporting wall on the fire side'* (i.e. mounted on the fire side of the furnace wall), then for integrity only performance the opposite orientation of exposure is also covered.