Fire Resisting Roller Shutter

Introduction:
Fire roller shutters are manufactured by HART to ½ hour (30mins), 1 hour (60mins), 2 hour (120mins) and 4 hour (240mins) fire resistance specifically to customer requirements which will in turn be conditional on building regulations and insurance company requirements. The sizes range from small service-ways through commercial to very large industrial doors. The recommended method of operation for all sizes is by electric motor, designed specifically for the purpose. These motor units provide ease of use, the necessary safe controlled automatic operation in the event of fire and satisfy health and safety recommendations. More traditional spring counterbalanced hand operated doors will provide marginally lower cost options but will have safety & operational considerations.

System Design Supporting Structure:
A: The structure supporting the roller shutter doorset must be a fire resistant separating element to B.S.476: Part 20,21,22: 1985 (code of practice for masonry) and have a density > 600kg/m³. Units spanning the structural opening should comply with B.S.8110 (structural use of concrete). Part1: 1997 (code of design for design and construction).
B: Where rolling shutters are fixed to steel the steel must be insulated and thermal bridging effects considered where any insulation has been breached. Currently being tested and reviewed insulated steelwork may be used to support up to 2 hour fire resistance only. The LPC recommends that a critical temperature of 400°C and steel sections with a H/vA value below 230m² are used for designing fire resisting steel supporting structures. Only steel supporting structures designed to these parameters are considered by the Loss Prevention Council suitable for supporting roller shutters. This assessment does not cover steel(without the above provisos), aerated concrete (with a density < 600kg/m³) or drywall partition systems without relevant test information.

Counter tops:
If required for shutter to close onto should be of Class O fire resistance.

Casing support brackets:
required for 60 minute and over fire resistance (not 30 minute) These heavy brackets designed to support the casing and roller in a fire situation are to be equally spaced normally at less than 1500 centres, dependant on the size and fire rating required.

Approvals:
Building regulations require the use of certified products for resistance of fire. Insurance companies also have the same requirements. The Loss Prevention Council (LPC) is the approving authority for fire resisting products. They have tested, assessed and approved HART DOOR SYSTEMS fire roller shutters. They also monitor the ISO 9002 system that we operate to ensure standards are maintained during production and installation.

Operation in normal condition:
Electric systems provide ease of use with press button operation and, should the door be used for security or general purposes, a key operated option to prevent unauthorised use. For safety reasons the position that the door is operated from must be able to enjoy a full view of the entire door. ‘Constant pressure must be maintained on the button by the operator’ until the door is fully closed. Additional safety must be provided for pedestrians if this is not the case.

Automatic activation in fire condition:
Least cost option is that the door be activated by a sacrificial fusible link. This will activate the door independently when the heat around the link reaches approximately 75°C (other temperatures available). It will not be triggered by smoke & will require replacement before the door can operate normally again. Alternatively most frequently, a fire roller shutter will be part of an overall fire (and smoke) control system. The electrically operated fire roller shutter system’s solenoid when initiated by a 24 volt DC 3amp supply, provided by the fire control system, will immediately commence the shutter to close at a controlled rate until it is fully closed. In the event of a fire test or false alarm the main fire control panel when reset, will allow the optional manual or auto re-set of the fire shutter to engage & return the system to normal operation after pressing the reset button. Various degrees of improving sophistication are available on request.

Pedestrian safety:
Will take precedence, when pedestrians commonly use the door. Audio-visual alarms coupled with delayed operation and pedestrian photocells can be fitted. Safety brakes are fitted to all electric unsprung pedestrian fire roller shutters to prevent uncontrolled closure in the event of mechanical failure.

Hazard Analysis:
When the roller shutter is fully closed the elevated temperatures exhibited by the unexposed face of the shutter is sufficient to cause fire spread by radiant heat transfer. Sufficient distance is required for storing combustible materials from the face of the roller shutter as recommended in the LPC Design Guide of the Fire Protection of Buildings’. For example, combustible materials would require a safe distance of 3m from a 10m² fire roller shutter.

Finish:
Galvanised steel finish or powder coated in TGIC-free polyester in all BS and RAL colours. Plastisol finish available for shutters up to 2.5m² in a range of colours. Paint finish tested and approved to BS476/Part22.

Service and maintenance and testing:
Fire roller shutters must be regularly tested to ensure that they operate i.e. close on activation by the fire control system. Power operated doors must be maintained to manufacturer’s requirements to comply with the machinery safety in use legislation and with the HSE recommendations.

Duty cycle:
Limited duty cycle is provided only providing one operation per hour dependant on size of shutter and motor being either single or three phase. Should it be the intention that more frequent operation is required this should be stated in the initial enquiry and will need higher duty cycle equipment.

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These datasheets are generated internally so that the information we provide is as up-to-date as possible, incorporating all changes introduced by continuous improvement of our products. We reserve the right to change specifications at any time without notice.
Architects Shortform:
Electrically operated fire roller shutter to ………. minutes fire resistance. To include motor drive with manual hand over-ride and ‘controlled speed of closure’ (controlled fall), and safety brake over-ride operated by (press button or ………). Fire activation by fusible link or solenoid push button reset 24VDC power supply activation by others. To include hood to enclose roller and brackets as required. Finish standard galvanised/powdercoat. All to comply with LPC assessment number 16. Further options: Audio visual alarms and delayed operation.

Roller Shutter Data & Specification:

- **Fire resistance:**
  - 30 minute, 60 minute, 120 minute and 240 minute.

- **Size availability:**
  - Up to 7 meters wide and 7 meters high clear opening, thereafter to special design.

- **Power supply:**
  - Single phase or three phase as specified on the quotation.

- **Motor:**
  - Geared electric in line motor unit with limit switch override. Unit capable of brake release via fusible link or solenoid to provide safe controlled rate of door closure under gravity.

- **Manual override:**
  - By hand chain through motor (very slow and not suitable for frequent operation).

- **Shutter curtain:**
  - 2 hour (120 mins) and 4 hour (240 mins): A minimum of 20g for doors up to 5m or 25 square meters and thereafter 18g.
  - 1/2 hour (30 mins) and 1 hour (60 mins): A minimum of 20g discretionary above 5m or 25 square meters.

- **Finish:**
  - Galvanised most exposed parts or powder coat to requirements. Primer finish on all other parts.

- **Safety:**
  - An over speed safety brake is fitted to the roller so that in the event of a drive failure the shutter will be stopped from falling by the safety brake. As required by the machinery directive and other impending EEC regulations enforced by the HSE. Photo cells and audio visual alarms can be provided to protect pedestrians and to provide delayed operation.

- **Fire activation:**
  - Fusible link or solenoid. Solenoid options for manual or electrically reset. Solenoid is operated by a 24V.DC power supply. This is available as an optional extra although more normally supplied and wired by the main fire system installer.

- **Normal operation:**
  - Press buttons or key switch. Single phase options include 13 amp fittings with electric reset and isolator facilities likewise industrial versions.