

## FREEDOM TO ESCAPE

by David Miller M.I.S.(SA)

This is a revision of an Article by David Miller, first published in Fire Protection Magazine.

**Any person MUST be able to use any escape door from the inside, at any time, without special knowledge tools, gadgets or even hands!** A fire escape can be defined as “a hinged, outward-opening door that can be easily opened in the dark, by an aged, arthritic pygmy with no prior knowledge of the premises or equipment.”

*National Building Regulations and Building Standards Act 103 of 1977 T2(2) states: “Any person who causes or permits any escape route to be rendered less effective or to be obstructed in any way which may hinder or prevent the escape of any person from a building in the case of fire or other emergency shall be guilty of an offence.” The act further states under TT19.5 “any access door or any other door, being a component of an emergency route **shall be a hinged door which shall open in the direction of egress**” (i.e. **OUTWARD OPENING**).*

There is a clear onus on building owners, operators and managers to ensure that emergency exits open outwards, and that all escape routes allow unobstructed escape; what is also implied is that they must have **approved** and effective Fire-Rated escape hardware. Note that NOT ALL panic hardware is Fire-Rated!

Probably 90% of the escape doors we encounter in South Africa are hinged doors, governed by the above rules (although in certain circumstances and conditions there are other recognized means of escape). This article does not purport to be all encompassing, but deals primarily with the hinged escape doors found in most commercial and industrial buildings. Most premises will have one or more dedicated fire escapes or emergency exit doors, depending on size, designed occupancy, the number of floors, and/or hazardous materials being stored or processed. **All Emergency exits must all comply with National Building Regulations and with SANS 10-400T.**

Until about thirty years ago, most panic bars were ugly, difficult to open, and harder to close. Many neglected, rusty and un-usable examples are still found on fire escape doors today, and some are even illegally fitted with chains and padlocks! Such blights on safety and security standards are usually also an indication that the doors are neglected and are not tested regularly. Fire hazards are often found stored in front of these doors – which could cause injuries or deaths and multiple penalties!

### **What is required:**

1. **Where a building or an exit is designed for an occupancy of 25 persons or more, (or for special risks or uses), escape hardware must be ‘operable by body-weight’.** This implies using what is generally known as a panic bar or panic hardware, and is the most common acceptable form of escape, particularly on public buildings.

For the panic hardware to be effective – doors, door frames and hinges must be of good quality, properly fitted and maintained. Doors must open and close freely without hindrance and without force.



Panic bars and latches available today are user- friendly, easy to close and easy to open. Panic bars with vertical rods (illustrated at right) will lock the door at both top and bottom, offering good security against outside attack. Good quality branded and Fire-Rated panic hardware is robust, and if correctly fitted, will offer good resistance to attack from the outside.



Fire-Rated panic bars will self-lock after being opened, provided they are used with the correct dual-action door closer such as **CISA 1510** or **CISA 1610** (depending on door **size**).

2. In buildings designed for occupancies of less than 25 people, where there are no special fire hazards, a latch lock fitted with a normal handle, or a thumbturn, (NOT both!) **may** suffice for escape, assuming that it is easy to operate with no special knowledge.



Always check with the local fire authority if in doubt.

3. In certain circumstances local authorities will permit **fail-safe** electronic devices such as magnetic locks and **fail-safe** electric strikers for releasing fire and exit doors, **provided these devices are connected to the appropriate approved fire detection systems for automatic release in the event of fire.** In addition they must **unlock automatically if wires are burnt or if power is disconnected.** This is a relatively gray area not dealt with in this article, and local authorities should be consulted in every instance, at the planning stage.



**What is NOT allowed on escape doors:**

- Locks or anything that requires a key to open are not acceptable.
- Break-glass 'fire-bolts' and keys housed in boxes with glass fronts should never be used on any door which is a designated fire escape or is part of an escape route. (Testing has shown that even with the hammer in hand, most people cannot find the break-glass in the dark or smoky conditions!)
- Any lock or device which requires special knowledge to open is not acceptable.



**It is not permissible to lock emergency exit doors in any way that will require a person to know, see or do something - other than to push forward, in an emergency.**

## SAFETY VERSUS LOSS CONTROL

This is an age-old conflict between Safety & Security and Loss Control managers who each see the needs of the other's department as conflicting with their own. Fortunately the hardware and technology are readily available today to satisfy both needs.

**Safety Managers** will want to be sure that escape doors can open easily (usually by body-weight) in the event of an emergency. In the case of double doors BOTH leaves must open when pushed. They should want doors of the **correct fire-rating** for the risk / occupancy, which **close automatically after escape**, to prevent the ingress of oxygen. Fresh air (oxygen) will fan the flames, make the fire more severe, and disperse harmful and toxic smoke into the escape routes and throughout the building.

**Security or Loss Control Managers** would probably prefer the doors to be locked completely! Since this cannot be allowed, they will want the correct door closers to ensure that doors re-lock automatically after being used. They will prefer panic bolts with vertical bolts where practical, at least on one leaf in the case of double doors, to protect against forced entry from outside.

They will want the doors to be monitored on a 24 hour alarm circuit, and possibly also want a local alarm for instant reaction. **DETEX EAX-500** (illustrated at left) and **EAX-2500** (illustrated at right) alarm units with 96 Db siren are available in flush or surface mount, as battery operated stand-alone units, or mains powered with battery backup. **DETEX EAX-2500** can also be connected to control rooms and alarm panels for remote monitoring.



**Management** may want the escape doors to be used for access (i.e. fire doors between floors in an office building). Access from the outside without infringing fire regulations is usually permissible, provided the door is self-closing. The following are the most commonly used methods of access:

- Standard latch-type keys, or High security registered keys (requiring authorized signatures and/or cards for making keys). The keys can operate a morticed latch, which is opened from the inside by means of a panic latch bar.
- An electric striker in combination with the correct lock and latch bar will enable the use of Proximity tags, cards, finger or face biometric readers etc, either as stand-alones or in all the usual on-line roles, for access from outside.
- **DETEX V4001 x ER** is a UL-Listed heavy-duty tamper-proof panic bar with built-in electric release using 24 volt DC, and is available in a monitored version on request.

Today, the needs of Safety and Loss Control, as well as Management's need for Access Control, can all be met by using the right equipment and without lowering life-safety standards or infringing the fire regulations.

### Making Loss Control Managers Happy:

We cannot, and should not want to prevent people from escaping, but we can monitor escape doors using CCTV, and by alarming them. Every dedicated fire escape (i.e. not intended for any other purpose) should in any event always be monitored on a 24 hour circuit connected to the alarm monitoring station.

In addition, fire escapes can be locally monitored (i.e. a loud alarm at the door) to prevent pilferage of valuable items during working hours, using alarmed exit devices such as the fire-rated door-width Detex V40 series, available in stand-alone with battery powered 96 dB alarm, or in a number of hard-wired and monitored variations, including one with built-in electric release facilities and external battery-backed power supply.



For narrower doors, the industrial quality **DETEX ECL-600** alarmed deadlock with automatic re-latching and 96dB alarm is available, with internal 9-volt battery powering the built-in alarm.



### **Specifying the right stuff:**

It is important to assess the risks, hazardous and heat-producing processes and the number of people who may possibly occupy the building at any time, before deciding on the right category of fire doors to meet regulations. Doors need to be correctly hung, and free-swinging all the way from the fully-open to the fully closed position, in order to operate well and allow the hardware to operate correctly. When ordering certain Fire-Rated doors, such as Class B, it is important to specify in advance what hardware will be fitted, since these doors will need to be manufactured with the appropriate 'lock-block' to allow the mounting of locks, door closers and panic hardware to take place, without impinging on the integrity of the door's fire resistance. Note that Fire-Rated doors must bear the SANS label – usually found on the top edge or top face of the door, which will indicate the approved fire-rating of that door.

**As with most things in security, “goedkoop is duurkoop” and it definitely pays to have good quality doors, properly hung, and fitted with good, durable Fire-Rated escape hardware.** (Note that NOT all panic hardware available is Fire-Rated!)

Commercial & Industrial building owners and safety and security managers should be reminded to adhere to SANS 10-400T and the National Building Regulations in terms of the need to allow free escape to any person in an emergency. If the possibility of injuries and loss of life are not sobering enough – there are also **severe fines and jail sentences** provided for by the Occupational Safety & Health Act, and in recent years also the Consumer Protection Act, all of which would certainly be applicable if a person was injured, maimed or killed due to escape doors not working properly! An insurance claim under such circumstances should certainly be rejected on the grounds that the relevant regulations and laws were flouted!

About the author (updated 2020)

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