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## **A GUIDE TO EMERGENCY EXIT & PANIC HARDWARE FOR HINGED, OUTWARD-OPENING FIRE ESCAPE DOORS**

By David Miller CPP M.I.S. (SA)

While it is almost impossible to prescribe the correct solution for every building and every door without seeing the doors, this guide attempts to deal with certain basic fundamental requirements for the successful implementation of emergency exits and panic hardware.

**Badly mounted frames or doors that are loose, badly hung, warped, cracked or out-of-square, will severely limit the chances of proper operation, and will require ongoing replacements, adjustments, repairs and expenses to keep the door/s, securely locked against intrusion from outside and functioning as a smoke-seal. Such malfunctions usually prevent locks, panic hardware and door closers from working properly, and prevent free escape from inside, which is mandatory in terms of National Building Regulations, OSHA, CPA, Municipal and other laws.**

**The following must be specified for all new door frames and doors:**

**DOOR FRAMES** must be correctly aligned, straight, level and true - and should be securely fixed so that the frame does not move at all, even when the door is being pushed, pulled, opened or closed.

**DOORS must be properly aligned** with an even gap all round, when seen in the closed position. The vertical gap between door and frame must be the same at the top as at the bottom, on both the left and the right side of the door.

Additionally, in the case of DOUBLE-LEAVED doors, the vertical gap between the two doors must be the same at the top as at the bottom, and **the two door-edges must not foul each other!**

**HINGES:** The most common **malpractice** is to use hinges that are too light – to effect a small cost saving! Use at least 1.5 pairs of **heavy duty ball-bearing hinges, per door-leaf!** Cladding a door with metal sheets, or adding a panic bar and/or a door closer, adds significantly to the weight of the door – and hence the strain on the hinges. Consider 2 pairs of hinges per leaf for heavier loads.

**Doors must** be able to operate easily and freely, from the fully open to the fully closed position –**all the way into the frame / locked position** using only the pinkie-finger, with minimal pressure, and the door must not bounce back from the closed position when that finger is removed. Any binding or reluctance to either close or open freely, is NOT acceptable – it will NOT get better with use, and it will affect the proper operation and longevity of any hardware fitted. If the door does not easily open or close fully with normal use - it is **unacceptable as a fire escape!**

There is no substitute for good doors and frames that are properly fitted, and all doors should be properly tested before acceptance, and **before** fitting any hardware. Door closers and other hardware **cannot** cure a badly hung door, a binding hinge or misalignment of door or frame.

*The hinges used with steel door frames are usually factory-fitted by the steel frame manufacturer, and are more difficult to change. Many SABS Fire-Rated doors are supplied ready-mounted in the frame by the door manufacturer.*

## **ALL Emergency Exit Doors must open OUTWARDS - in the direction of escape**

### NOTES:

- The fire-rating of doors depends largely on the 'designed occupancy', and the hazards relating to the building, or specific part of the building concerned.
- Designed occupancy is a factor that is taken into account when determining the Fire-Rating, the size and the number of doors required. (e.g. A lecture room with 90 seats has a 'designed occupancy' of 90).
- A building of two or more stories height usually requires more emergency exit doors than a single storey building. The number of stories, the floor area and the designed occupancy are all factors that the authorities will take into account when inspecting a building and/or deciding the width and quantity of emergency exits and escape routes required.
- Fire-rating of doors, such as half-hour, one hour or two hour resistance to fire - is generally determined by the risks involved, the processes carried out, the nature of goods stored and the number of people who could be in the building at any time.
- The door between a factory and the office or other part of a building is usually Fire-Rated and is intended to be automatically closed by a door closer, to ensure that smoke and fire do not spread from compartment "A" to compartment "B" and vice-versa, for a certain length of time. The final external exit door is usually not Fire-Rated – but this too will depend on the risk factors on either side of the door, and the goods stored or processes taking place inside and outside the building.
- Keeping fire exits closed is critical in order to prevent the ingress of fresh air. Oxygen would fan the fire and cause it to spread more quickly. Fresh air also causes a draught which drives the smoke through the building. Smoke is a killer – victims usually become unconscious and then die of asphyxia long before the fire reaches them.
- If an instruction has been issued by the Fire Authority to comply with regulations– it is important to consult that document to ascertain exactly what the authorities require. The specification may include important details such as fire rating, door selectors, door closers etc.
- Door selectors are used to ensure that the fixed (second-opening leaf) leaf closes before the moving (first-opening) leaf. This is of particular importance to ensure a proper air and smoke "seal", and to prevent breaking of the "lip" of a rebated door, (which happens when rebated doors are closed in the incorrect order).
- Door closers: For Fire and Emergency Exits and for Access Control doors, use **CISA** Fire-Rated dual action surface mounted overhead door closers (CE mark for Reg. EU No. 305/2011). Fit one **CISA** model **C1510** or **C1610** or the **GEZE** equivalent on each door leaf, depending on total size of the door-leaf and the draught/wind conditions.
- Whenever there is a need to specify new doors, all care must be taken to specify the correct fire-rating, and the highest standards of workmanship, in fitting and aligning such doors. It should be stipulated that the prevailing 'general standard of the industry' is simply not sufficient.

Whilst the information in this document is intended for general guidance, it is not a substitute for good, expert on-site advice, on a door-by-door basis.

**NO LIABILITY is accepted for consequential or any other losses at any time from any cause - regardless of whether or not this guidance is correctly applied.**



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**PANIC HARDWARE FOR HINGED, OUTWARD-OPENING  
FIRE ESCAPE DOORS**

**INDUSTRIAL STYLE PANIC BARS**



**F411 09 011**  
Panic Latch Bar



**F411 09 001**  
Panic Bar with Vertical  
top & bottom locking Rods



**F412 09 001**  
Double Door set comprising a  
Panic Bar with Vertical Rods for  
the fixed leaf, and a Panic Latch  
Bar on the moving leaf



**F411 09 051**  
Locking outside handle  
can be used with the items  
above and at left, when outside  
access by key is required



**DETEX EAX-500**  
Stand-alone battery powered  
Alarm - **can be used on any  
door**, regardless of hardware.  
Immediate alarm when door opens

**DETEX EAX-300**  
Stand-alone battery powered  
Alarm - **can be used on any  
door**, regardless of hardware.  
Delayed (fail-to-CLOSE) alarm



**DETEX EAX-2500**  
alarm using external power  
with internal 9 Volt battery as backup  
**Remote monitoring** facilities.  
**Can be used on any door.**  
Immediate alarm when door opens

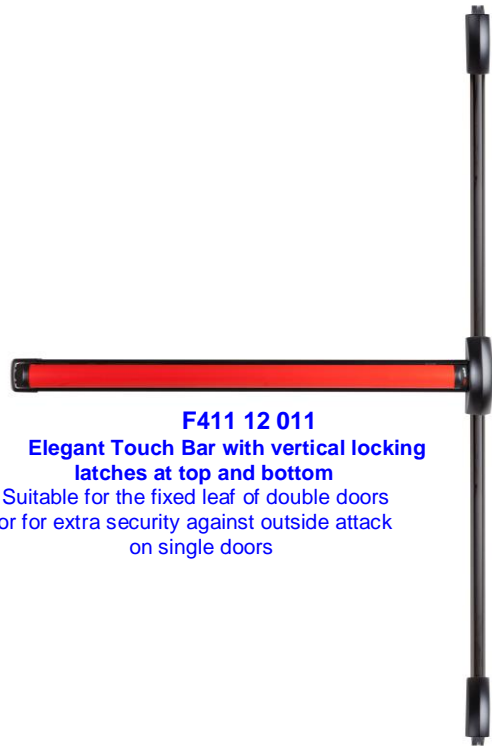
**From the Boardroom Door - to the Factory Floor – we have secure solutions that work!**

## STANDARD PANIC BARS



**F411 12 036**  
**Panic Bar with Vertical locking latches at top and bottom**  
Suitable for the fixed leaf of double doors, or for extra security against outside attack on single doors

## ELEGANT TOUCH BARS



**F411 12 011**  
**Elegant Touch Bar with vertical locking latches at top and bottom**  
Suitable for the fixed leaf of double doors or for extra security against outside attack on single doors



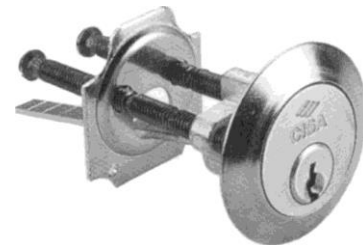
**F411 12 031**  
**Panic Latch Bar**



**F411 12 013**  
**Elegant Touch Panic Latch Bar**



**F411 12 051**  
Outside lockable handle for F411 12 series Panic Hardware



**3146 12 002 cylinder + F411 12 009 adaptor**  
Key-operated NP outside cylinder for F411 12 series Panic Hardware, requires one F411 12 009 adaptor (at extra cost) and one pull handle (sold separately)

## OTHER PANIC HARDWARE



**F411 12 041**

Escape latch handle – only permitted for very small occupancies



**F181 12 102 12 volt DC**

**F181 12 101 12 volt AC**

Surface mounted electric striker for access control using F411 12 series Panic Latches



### **DOUBLE DOORS WITH PANIC HARDWARE & ACCESS CONTROL**

The illustration at left shows (the inside view of) a pair of double doors fitted with emergency exit (panic) hardware, allowing escape from either door at any time by pushing either bar. The panic bar with vertical rods at left secures the fixed leaf. The moving leaf (at right) is locked against the fixed leaf by a touch bar, which when pushed, drives a morticed lock, as illustrated at right above. No power is used by this lock; it can always be opened from the inside by pushing the bar, and from outside by using a key. An electric strike release, fitted to the fixed leaf, will – when operated electrically, release the moving leaf. Many variations on this theme are possible, including operation from outside by high security key and / or electric release using biometrics, Blue Tooth, mobile phones, codes or proximity tags.

## **DETEX HEAVY DUTY ALARMED EMERGENCY EXIT DEVICES**



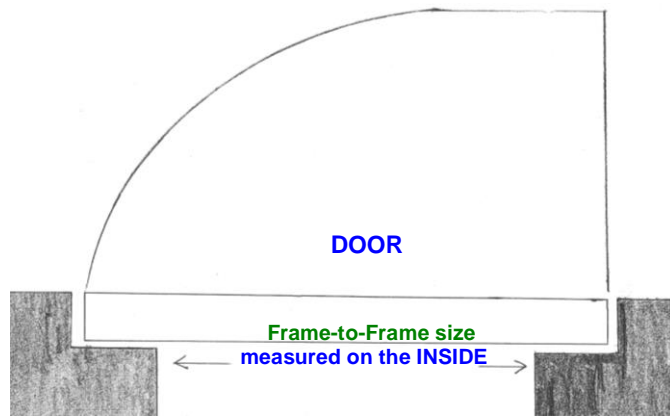
### **DETEX V40 SERIES**

- Heavy duty 20 mm stainless steel deadlocking latch ensures automatic re-locking when the door closes, and withstands 600 Kg pressure!
- UL listed panic hardware, UL listed fire exit hardware, ANSI/BHMA certified A156.3UBC 97 standard 7-2 & UL10C for positive pressure
- Exceeds the USA 500,000 cycle testing requirement  
10 YEAR mechanical / 3 YEAR electrical - limited manufacturer's warranty

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LOCKING SINCE 1975

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**WHEN SPECIFYING A DETEX V40 PRODUCT – MEASURE THE DOOR FRAME ON THE INSIDE**  
 while the door is CLOSED. Note that the door is **bigger** than the inside measurement of the frame.  
 In order to ensure that the entire device can pass through the frame without snagging as the door opens  
 outwards, take the **inside (smaller)** measurement of the space between the left side and the right side of the door frame.



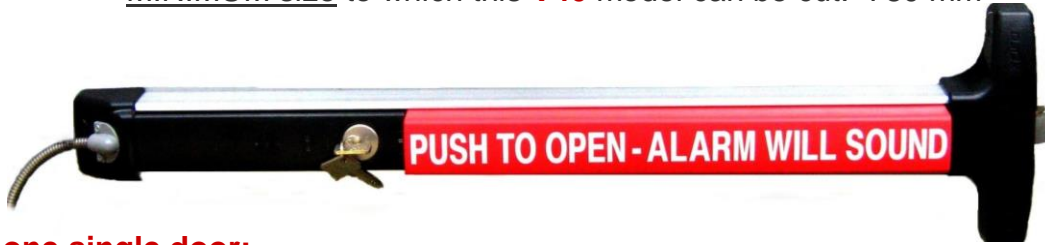
**DETEX V40** models are 865 mm wide out-of-the-box.  
 They can be cut down to the following **MINIMUM** Frame-to-Frame sizes:  
**MINIMUM**

**MODELS WITH INTERNAL 95dB ALARM**

<b>V40 x EI</b>	<b>Local alarm &amp; micro-switches for remote monitoring.</b> Requires external 12 volt power for alarm	<b>790 mm</b>
<b>V40 X EB</b>	<b>Stand-alone model with battery powered alarm</b>	<b>810 mm</b>
<b>V40 x EB x W</b>	<b>Rugged weatherised, alarmed version designed for outdoor use</b> Weatherproofed to US Military Spec for salt fog & driving rain	<b>810 mm</b>
<b>V40 x EE</b>	<b>Delayed exit models (15 secs) with full monitoring and bypass facilities.</b> The delay facility requires permission of the local authority	<b>830 mm</b>
<b>V4001 x ER</b>	<b>Electrically retractable latch - needs 24V DC for entry, and no power to exit. NO internal alarm.</b> Monitoring is an optional extra – specify V4001 x ER x EX	<b>860 mm</b>
<b>V40</b>	<b>Heavy-duty touch-bar matching panic device. Mechanical only.</b> NO electronics, alarm or monitoring facilities	<b>710 mm</b>

## DETEX V40 x EI x RSS

Developed specially for the South African Retail Security environment.  
MINIMUM size to which this **V40** model can be cut: 780 mm



### For one single door:

- **Specify one DETEX V40 x EI x RSS**

Alarmed panic bar with stainless steel door loop and fitted cable, supplied ready for use on Fire Escapes in retail stores, where both monitoring and a local alarm (95 dB) are required. Status of the push bar, the latch, and the key switch (alarm on-off status) can be monitored remotely. The key switch can be ordered as standard, high security, keyed alike, or masterkeyed at extra cost. **CISA ASTRAL TEKNO S01** or **CISA C3000 T06** high security cylinders can be specified at extra cost

### For one pair of double doors:

- **Specify one DETEX V40 x EI x RSS**  
**PLUS:**
- **One F411 12 011 touch bar**  
with vertical locking rods,  
for the fixed leaf,  
**PLUS**
- **One F413 78 404 Double Door Striker.**  
for the fixed leaf



**NOTE THAT NOT ALL PANIC HARDWARE IS FIRE-RATED – OUR IS !**

WE SELL ALL LOCKING HARDWARE - **EVERYTHING** - FOR EVERY DOOR OR GATE  
AND HAVE OVER 120 YEARS OF LOCKING HARDWARE EXPERIENCE BETWEEN FOUR OF US.

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