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

By David Miller 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 evacuation or 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. Unhindered escape 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 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 achieve 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 causes more strain on the hinges. Consider heavier hinges or **2 pairs** of hinges per leaf for heavier doors and hardware.

Doors must be able to move 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 a warped or a misaligned 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 / SANS 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 processes and hazards relating to the building, or specific part of the building concerned.
- 'Designed occupancy' is a factor that is considered when determining the Fire-Rating of doors, as well as the size and the number of emergency exit 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 consider when inspecting a building and/or deciding the width and the number 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 30, 60 or 120 minutes, as the case may be. 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, and to share that document with contractors before they quote. The specification may include important details such as the required fire-rating, the requirement for door-closers and / or for door selectors, etc.
- Door selectors are used to ensure that the fixed (second-opening leaf) leaf closes before the moving (first-opening) leaf. This is of 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 noted 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

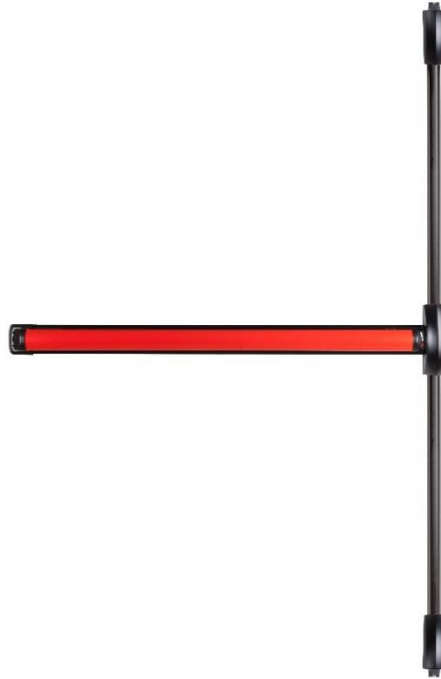


F411 12 036

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 (at extra cost)

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

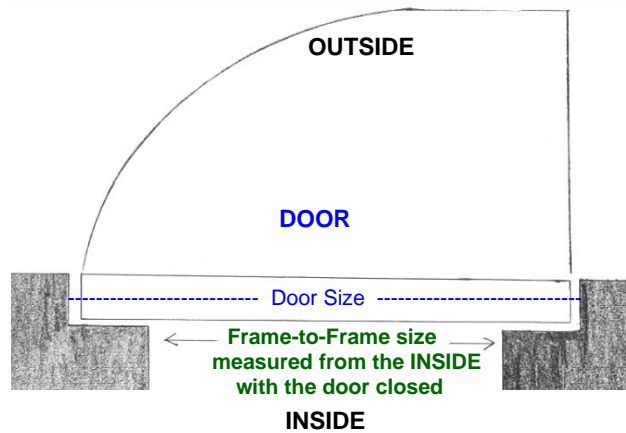
- Heavy duty 20 mm stainless steel deadlocking latch ensures automatic re-locking when the door closes and withstands 600 Kg pressure!
- UL listed panic hardware, UL listed fire exit hardware, ANSI/BHMA certified A156.3UBC 97 standard 7-2 & UL10C for positive pressure
- Exceeds the USA 500,000 cycle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

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DETEX panic hardware is heavier and more ruggedly constructed than other brands and has its heavy operating mechanisms inside the push-bar. There are limits to the size to which each of the **DETEX V40** models can be cut, due to the fact that the push-bar is not just the empty hollow tube/section found in conventional panic bars.

Please supply accurate **FRAME-TO-FRAME MEASUREMENTS** as shown below:



Note that the panic device must be able to pass through the smallest inside measurement of the frame, shown as the **Frame-to-Frame size**, indicated by the arrows above

WHEN SPECIFYING PANIC HARDWARE ALWAYS MEASURE THE DOOR FRAME FROM THE INSIDE

while the door is **CLOSED**. Note that the door is usually **bigger** than the inside measurement of the frame.

Since emergency exit doors always opens outward, it is essential to ensure that the panic device can pass through the opening without touching the frame (or the other door-leaf, in the case of double-doors).

Take the **inside** measurement between the left side and the right side of the door frame – as **shown in green above**



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

MINIMUM

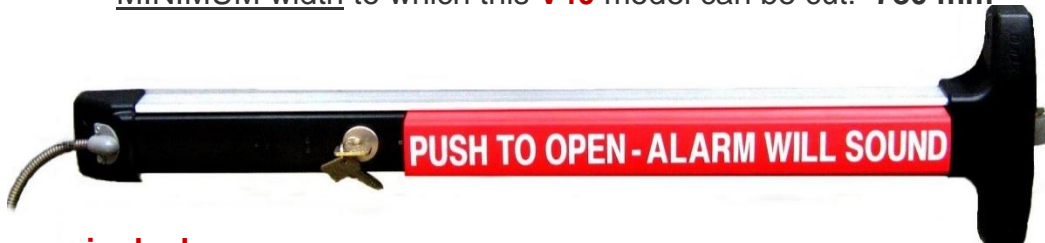
MODELS WITH INTERNAL 95dB ALARM

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

If the openings are too narrow for the above solutions – please ask us for alternative products.

DETEX V40 x EI x RSS

Developed specially for the South African Retail Security environment.
MINIMUM width 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, keyed alike, or masterkeyed at extra cost.

CISA ASTRAL TEKNO S01 or **CISA C3000 T06 high security** cylinders can be ordered at nominal 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 100 YEARS OF LOCKING HARDWARE EXPERIENCE

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