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. Such 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 hence the 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 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, 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 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 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 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 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.
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

- **F411 12 031**
  Panic Latch Bar

**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 12 013**
  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

Phone +27 (0)21 555-1720 info@lockshop.co.za

Panic hardware for fire escapes - guide 200501 5 / 7
Copyright David Miller 2020
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 MEAUREMENTS as shown below:

![Frame-to-Frame Measurement Diagram]

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 open 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:

<table>
<thead>
<tr>
<th>MODEL</th>
<th>DESCRIPTION</th>
<th>MINIMUM SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>V40 x EI</td>
<td>Local alarm &amp; micro-switches for remote monitoring. Requires external 12-volt regulated power for alarm</td>
<td>790 mm</td>
</tr>
<tr>
<td>V40 X EB</td>
<td>Stand-alone model with battery powered alarm</td>
<td>810 mm</td>
</tr>
<tr>
<td>V40 x EB x W</td>
<td>Rugged weatherised, alarmed version designed for outdoor use Weatherproofed to US Military Spec for salt fog &amp; driving rain</td>
<td>810 mm</td>
</tr>
<tr>
<td>V40 x EE</td>
<td>Delayed exit models (15 secs) with full monitoring and bypass facilities. The delay facility requires permission of the local authority</td>
<td>830 mm</td>
</tr>
<tr>
<td>V4001 x ER</td>
<td>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</td>
<td>860 mm</td>
</tr>
<tr>
<td>V40</td>
<td>Heavy-duty touch-bar matching panic device. Mechanical only. NO electronics, alarm or monitoring facilities</td>
<td>710 mm</td>
</tr>
</tbody>
</table>

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

Phone +27 (0)21 555-1720  The LockShop  info@lockshop.co.za

Panic hardware for fire escapes - guide 200501  6 / 7  Copyright David Miller 2020
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 130 YEARS OF LOCKING HARDWARE EXPERIENCE BETWEEN FOUR OF US.

www.lockshop.co.za  info@lockshop.co.za

PHONE +27 (0)21-555-1720 and talk to The LOXPERTS!