

EMERGENCY REMOVAL OF PASSENGERS FROM STALLED ELEVATORS

INTRODUCTION

1.1 The emergency removal of passengers from stalled elevators can be a time consuming, labor-intensive event. When working around any machinery, all actions must be well thought out and deliberate. Precautions must be taken to ensure the safety of both the victims and the rescuers. The need for effective administration of emergency medical services must be considered at every elevator incident. Lock-out/tag-out measures must be in place. Safety ropes and harnesses may need to be employed to make certain that no one falls down an elevator hoistway. Personnel accountability procedures must be followed to prevent accidents. Rehabilitation of members during protracted incidents must also be taken into consideration. This Standard Operating Guide (SOG) is divided into two main subject areas.

- I. Removal of passengers from stalled elevators.
- II. Elevator accidents involving personal injury.

The Incident Commander (IC) at all elevator incidents must always consider safety first.

1.2 PURPOSE

- To provide practical and safe guidelines, to be applied when department members respond to stalled elevator incidents.
- To establish an operational course of action and effective level of response when dealing with elevator accidents involving personal injury.
- To provide a standard procedure for reporting to the proper authority and recording all relevant information relating to all elevator incidents.

DEFINITIONS

1.3 Elevator Status Panel – Located in the fire control room of high-rise buildings and usually on the main floor in other buildings. Provides operating status and location of elevator cars within the hoistway. Includes the intercom for communicating with all elevators.

1.4 Position Indicator – A device that indicates the position of the elevator car in the hoistway. It is called a hall position indicator when placed in the hall or a car position indicator when placed in a car.

1.5 Landing Zone – An elevator car is considered as being within the landing zone when the car floor is not more than eighteen inches (18”) above or below the landing.

1.6 Manual Elevator Standby Power Selection Switch - Located in the fire control room of high-rise buildings. The device used to transfer emergency power from one elevator to another.

1.7 ECC – Emergency Communications Center for the ANYTOWN/CITY.

NOTE: All italicized words found in this document are defined in the DEFINITIONS section above.

1.7 REGULATIONS AND STANDARDS

- 524 CMR-PART 35
- ASME/ANSI A17.1- 2000-Installation of New Elevators and Escalators

I. Removal of passengers from stalled elevators.

1.8 Response –1 Rescue Co. and 1 Ladder Co. or Engine Co. Notify Deputy Chief

1.9 Locate elevator – Ascertain, if possible, from the person who reported the incident, the location of the stalled elevator. Try to confirm this information by observing the hall *position indicator* of the stalled elevator.

1.10 Notify Service Mechanic – If a responsible person is present (building engineer, superintendent, owner, etc.) find out if the building is under contract with an elevator service contractor. Determine if the responsible person has keys to the elevator machine room, as access to this room will most likely be necessary. Keys will avoid the need for forcible entry. Determine the name of the service contractor and relay this information to the ECC Office. The ECC Office shall contact the elevator service contractor and try to get an estimate of their response time and relay this information to the IC. If no responsible person is present, the name and phone number of the elevator service contractor should be posted on a tag or sign in the elevator machine room. Unless there is a medical emergency, an excessively long estimated response time or other extreme condition, whenever possible, leave passengers in the car until the elevator service mechanic arrives. Under normal conditions, twenty to thirty minutes is a reasonable amount of time to wait for the elevator service mechanic.

NOTE: The name of the elevator manufacturer, which is usually prominently displayed within the car, is not necessarily the name of the elevator service contractor.

1.11 Communication – Communicate as soon as possible to the occupant(s) of the stalled elevator car the following:

- Steps are being taken to remove them from the car
- They are safe
- They should refrain from smoking

Also determine the following:

- The number of persons in the elevator
- Whether occupants are injured or ill
- The location of stalled car if known
- Whether the stop button, if provided, has been mistakenly set
- Are the lights on?
- How long has the elevator been stalled?

WARNING: Lack of lighting in an elevator car **DOES NOT** indicate that the power has been shut down at the main power disconnect switch.

NOTE: Consider using the intercom system between the *elevator status panel*, which is usually located on the main floor, and the elevator car.

1.12 While rescue operations are in progress, the occupants of the elevator should be kept informed of the progress being made and continually reassured of their safety.

1.13 **Power Failure** – If the cause of the stalled elevator(s) is due to a power failure in the area, many high-rise buildings are required to have an emergency power generator capable of providing power to all elevators.

1.14 **NOTE:** In order to transfer emergency power to the elevators, it will be necessary to activate the recall procedure by means of the firefighter's keyed switch capture station. Place the system in Phase I. Locate and operate the *manual elevator standby power selection switch*, to bring the elevator cars to the main floor, in most cases, only one at a time.

1.15 **Evacuation Procedures** – The IC shall send at least two members to the elevator machine room. The members shall be equipped with a hand light, halligan bar, hydraulic forcible entry tool, flathead axe, portable radio and a lock-out/tag-out kit. If keys to the elevator machine room are not available, forcible entry will be necessary. The members shall locate the elevator machine room and standby for specific orders from the IC.

Forcible entry shall be performed only on the orders of the IC.

1.16 The IC shall proceed with all other members to the floor on which the elevator car is stalled. When communicating with the occupant(s) of the elevator, only one member at a time should do the talking. Several people talking at the same time can lead to confusion and misunderstanding.

1.17 The occupant(s) shall be given specific instructions to apply force against the car door in the direction of closing. This action attempts to close the car door safety circuit which may be out of alignment. At the same time a member of the rescue team should apply closing force to the landing door. This action may be all that is necessary to re-energize the car. The occupant(s) should then be directed to press a floor button.

WARNING: This is the only directive that shall be given to the occupant(s) prior to shutting down and locking out and tagging out the power in the machine room.

1.18 Unless there is a medical emergency, an excessively long estimated response time or other extreme condition, it is always best to wait for the elevator service mechanic. It is recognized that the preferred safe practice in evacuating passengers is to move the elevator car to a landing level. **The movement of elevator cars by other than normal operation by members of this department is expressly forbidden.** Movement of the elevator car by any other means shall be attempted by experienced licensed elevator mechanics only. If there is an unreasonably long estimated response time for the elevator service contractor or if a medical emergency exists, the following procedure shall be attempted **in this order.**

1.19 The IC shall order the members standing by at the machine room to gain entry and shut down and lock-out/tag-out the power to the stalled elevator. If they are unable to determine which switch controls the elevator they shall notify the IC. If this should occur, all elevators in the bank, controlled by that machine room, must be cleared of all passengers. Activating Phase I fire emergency service will effectively accomplish this task. Once all passengers have been evacuated from all other elevators, the IC shall order the members in the machine room to shut down power to all elevators. If the members are unable to lock-out/tag-out any main power disconnect switch they shall immediately notify the IC. In all situations, both members with a portable radio shall remain at the door to the machine room to provide security. Their further services will be lost for the duration of the incident. The IC shall consider the need for additional resources. **No one is authorized to reestablish power to any elevator without the express consent of the IC.**

1.20 **The following point cannot be overemphasized.** The procedure of shutting down power at the main power disconnect switch is the **single most important step.** No further operations are to be attempted until the IC has received confirmation from the members in the elevator machine room that power has been shut down.

1.21 Door Opening Procedures:

1.22.1 Procedure when car is at or near the landing: (See Fig. 1-1.)

- a) Once the power has been shut down and confirmed by the IC, the occupant of the car shall be given specific instructions to place his/her hands on the car door and attempt to roll open the car door. The rescue team should **not** attempt, at this time, to assist, by putting pressure on the landing door, as this will work against the actions of the occupant.
- b) If the elevator has stalled within the *landing zone*, the passenger's actions may open the car door which will also unlock and open the landing door. On newer installations a restrictor bar has been installed to prevent the car door from being opened manually, unless the car is at or near its normal landing level.

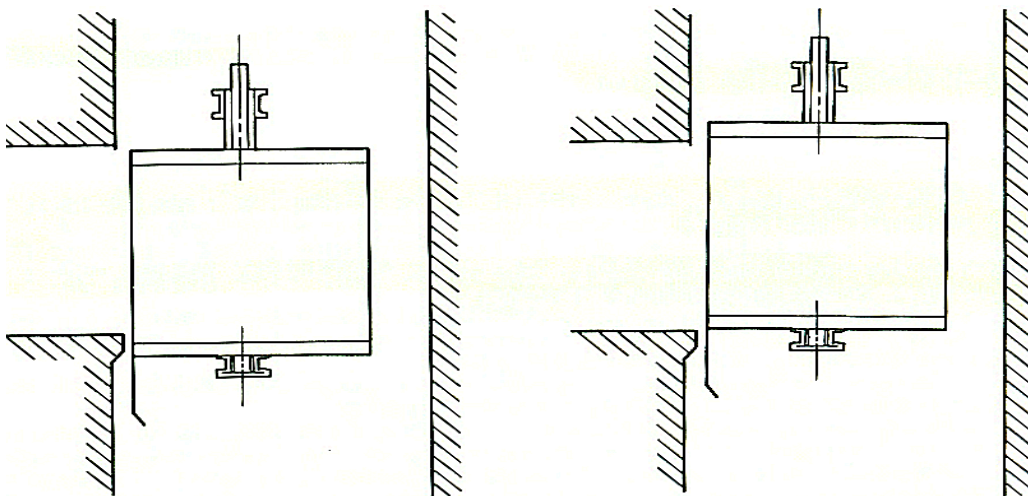


FIG. 1-1. CAR AT OR NEAR LANDING

1.21.2 Procedure when floor of car is within 3 feet of landing: (See Fig. 1-2.)

- a) Once the power has been shut down and confirmed by the IC, force open the hoistway door at the floor nearest to the stalled elevator car. (See Forcible Entry Techniques below.)
- b) **WARNING: Always consider the hazard of an open hoistway.** Precautions should be taken to guard any hoistway opening below the car floor when the elevator car is above the landing.
- c) Use ladders as necessary to provide a safe exit passageway for the occupants.

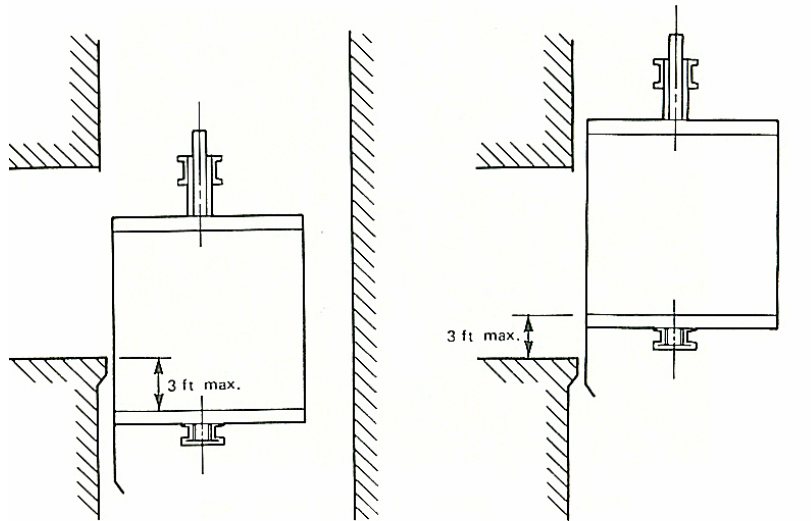


FIG. 1-2 CAR WITHIN 3 FT. OF LANDING

1.21.3 Procedure when car is more than 3 feet from the landing: (See Fig. 1-3.)

- a) Once the power has been shut down and confirmed by the IC, force open the hoistway door at the nearest landing **above** the stalled elevator car. (See Forcible Entry Techniques below.)
- b) **WARNING: When there are other elevators operating in a common hoistway, the IC must consider clearing all adjacent elevators of passengers and shut down and lock-out/tag-out power to these cars also. SAFETY FIRST.**
- c) Lower a ladder and securely position on the elevator car top. This ladder should be of sufficient length to extend at least 3 feet above the landing floor.
- d) One member of the rescue team, wearing a safety harness and properly tied off to a secured lifeline, shall descend to the top of the stalled elevator car. He/she shall place the car top emergency red toggle switch in the open position.
- e) Removal of the top emergency exit hatch may require the use of tools.

- f) Use extreme caution not to drop tools or hatch cover into elevator car.
- g) A second ladder shall be lowered through the top emergency exit and positioned between the elevator car floor and the car top. This ladder should be of sufficient length to extend at least 3 feet above the car top.
- h) A second rescue team member, also wearing a safety harness and properly tied off to a secured lifeline, shall then descend to the car top. This member shall carry an additional safety harness for use in rescuing the passengers.
- i) One team member shall enter the stalled elevator through the top emergency exit. The other team member remains on the top of the stalled car. A third member shall be positioned at the landing used to gain access to the hoistway.
- j) The passengers may then be assisted, one at a time, from within the elevator car to the car top, then to the landing above with the use of a safety harness and secured lifeline.

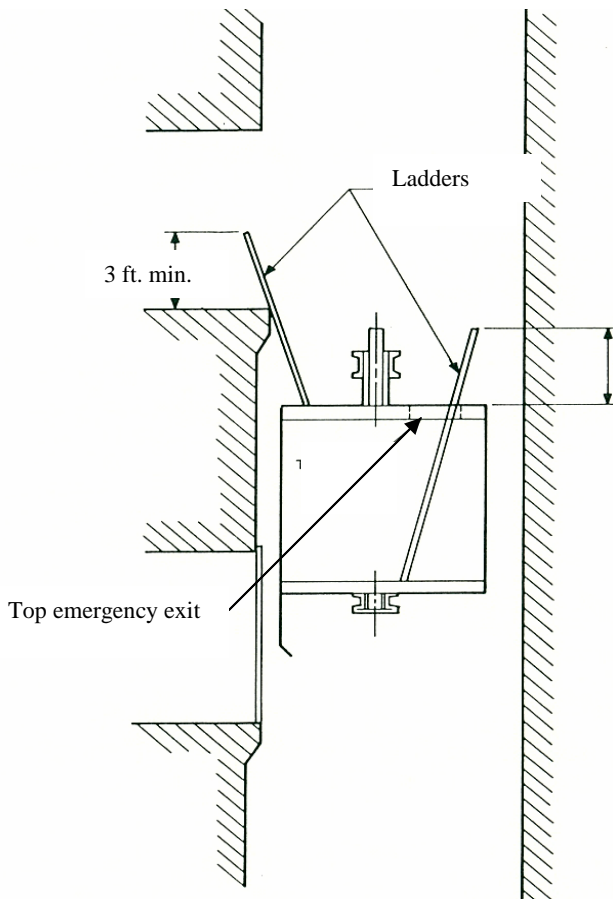


FIG. 1-3. USE OF TOP EMERGENCY EXIT

1.22 In each of the three procedures listed above, a member of the rescue team shall enter the elevator car prior to permitting the occupants to exit. Members both inside and outside the elevator car shall provide a helping hand to all exiting occupants. Occupants shall be physically guided to a safe area before the helping hand is released.

1.23 WARNING: The past practice of aligning cars and transferring passengers through the side escape panels from one car to another is no longer permitted. Side escape doors are being permanently fixed in place as it has been determined that their use creates an excessive hazard.

1.24 If elevator is stalled in a blind shaft, the rescue team should locate the nearest emergency access door above the stalled elevator car top and determine if its location, relative to the stalled car, is close enough to attempt a rescue with ladders.

1.25 **NOTE:** Manpower needs may require calling another company to the scene. If conditions warrant, IC shall consider upgrading to a confined space incident.

1.26 Forcible Entry Techniques:

- Prior to forcing a door instruct occupant(s) to step to the rear of the car away from the door.
- In descending order of preference the following forcible entry tools shall be used:
 - Hydraulic forcible entry tool (Rabbit tool, etc.).
 - Halligan bar with flat head axe
 - Mini lifting bag.
- Force shall be applied as close to the top of the door as possible.
- Applying force at the bottom of the door will only make the situation worse.
- Doors shall never be intentionally knocked off their rollers.
- Insert the tool between the door and the doorjamb on side sliding doors.
- Insert the tool between doors on center opening type.
- Don't confuse a two-speed side sliding door with a center opening door. The surfaces of the center opening doors are flush with each other. When forcing a two-speed side sliding door apply force at the doorjamb. (See Figures 1-4 and 1-5)

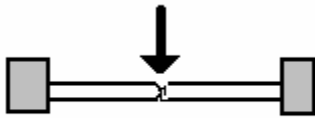


Fig. 1-4. TOP VIEW OF A CENTER-OPENING DOOR. ARROW INDICATES WHERE TOOL SHOULD BE APPLIED.

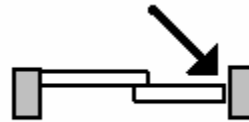


Fig. 1-5. TOP VIEW OF A TWO-SPEED SIDE SLIDE DOOR. ARROW INDICATES WHERE TOOL SHOULD BE APPLIED.

1.27 After passengers have been safely removed from the elevator car secure the landing door. It cannot be stressed too strongly that the danger of an unattended open hoistway is one of the most common causes of elevator fatalities. After the scene is secured or turned over to a competent person, power may be restored to all other elevators only. Remove lock-out/tag-out equipment from the main power disconnect switch of the stalled elevator but **do not** restore power.

II. Elevator accidents involving personal injury.

1.28 Response –1 Engine Co., 1 Ladder Co., 1 Rescue Co., 1 Deputy Chief , request an ALS and BLS response from Professional Ambulance . ECC shall utilize the directive on elevator accidents to request the response of a licensed elevator mechanic.

1.29 The means used to remove a victim entangled or crushed by elevator machinery may prevent a fatality or minimize the extent of the injuries. Before taking any action consider all of the following:

- Tactics will be based upon whether it is a rescue or a recovery.
- Consider the need for advanced life support intervention.
- Body Substance Isolation (**BSI**) precautions may need to be employed.
- Shut down and lock-out/tag-out power to the elevator and all adjacent elevators.
- Advise ECC to notify The State Elevator inspector ASAP.
- Is an elevator mechanic on the way?
- Set up hot, warm and cold zones.
- Is lighting adequate?
- Is there adequate manpower responding?
- Is this a crime scene? If so, notify Police.
- If accident occurred in machine room, consider the hazards of exposed electrical wiring and moving equipment.
- If accident occurred in hoistway consider fall hazards and the dangers of moving equipment.

1.30 The basic tactic will be to stabilize the elevator car and then move it enough to free the victim.

- Will it be necessary to breach a wall?
- Are the wire ropes slack?
- Secure elevator car using slings and come-alongs. Attach slings with come-along between the top of the car and the guide rail supports.
- How much movement will be required to free victim?
- Will removal of roller guides provide enough movement?
- If cutting torch is required to cut through guide rails, set up a charged line of hose.
- When using tools always consider the forces at work. Use the right tool for the right job.
- After victim has been removed and transported, stop all work and develop a plan for removing equipment. **WARNING: The same hazards exist during this phase. Consider Safety First.**

1.31 The IC shall turn the scene over to the proper authority only after all fire department personnel and their equipment have withdrawn from the scene.

In the case of an elevator accident:

- The IC shall determine if fire department lock-out/tag-out equipment should remain in place.
- If lock-out/tag-out equipment is removed, members of this department are not authorized to restore the power to the affected elevator.

1.32 Documentation

Every elevator incident responded to by this department requires proper documentation by means of a QED report. The IC shall submit a Form to the Office of the Chief of Department and Chief of Operations with a complete description of the services provided. The IC shall also report all malfunctions of elevators to the State Elevator Inspector through the ECC Office and on State Form SFM52E.

(see **attachment #1**)

1.33 Summary

1. No attempt shall be made to free passengers of a stalled elevator until the power has been shut down at the main power disconnect switch in the elevator machine room.
2. Unless there is a medical emergency or other extreme condition, it is always best to wait for the elevator service mechanic.
3. The name of the elevator service contractor can usually be found on a sign or tag in the elevator machine room. The service contractor is not always the same company as the elevator manufacturer.
4. Always consider safety first when working around elevator machinery.
5. Both members assigned to shut down power shall remain at the elevator machine room door to provide security after they have installed lock-out/tag-out equipment.
6. Secure all hoistway openings or turn scene over to a responsible person (building engineer, elevator mechanic, state inspector etc.) prior to returning to quarters.

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