



ANN ARBOR FIRE DEPARTMENT

Standard Operating Procedures – 3.42 Elevator Rescue



ELEVATOR RESCUE

Effective: September 20, 2018
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Replaces: 902 Elevator Rescue
Approved: Fire Chief Mike Kennedy

I. PURPOSE

It is the function of the Ann Arbor Fire Department (AAFD) to safely remove any persons from a stalled elevator car or hoistway. At no time, will any member of the AAFD repair or reactivate an elevator that has been deemed unsafe.

II. PROCEDURE

Upon arrival at any elevator incident, the officer in charge shall request assistance from a qualified elevator mechanic. This shall be accomplished through the building management personnel. This should not delay the actions of the AAFD and the safe removal may be accomplished before the arrival of an elevator mechanic.

AAFD operations fall into two categories: emergency and non-emergency. Persons who are not injured but are only inconvenienced are considered non-emergency situations. A true emergency may include persons stuck in an elevator during fire operations, injured, ill, or panicked persons in a stuck elevators and victims who have fallen into the shaft. Based on the situation, consider requesting additional resources.

It is not uncommon for people to be stuck in a stalled elevator. Removing the occupants should be a simple operation. Elevator malfunctions are, for the most part, due to electrical difficulties. An elevator contains many electric safety devices that are in place to protect the passenger. These same electrical devices fail and cause the elevator to stall. In both emergency and non-emergency situations, a sequence of actions must be followed to ensure a safe removal of occupants:

- A. Locate the stalled elevator car
- B. Communicate with the occupants of the stalled car
- C. Attempt a self or assisted rescue with the power on (if failure continues)
- D. Shut down power to stalled elevator
- E. Gain access to the hoistway
- F. Gain access to the stalled car
- G. Assist occupants out of the stalled car
- H. Secure the scene



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III. NON-EMERGENCY PROCEDURES

Upon arrival, contact with the person who called in the incident or a building representative, should be of importance. This person may be able to inform you of the location of the stalled car and the status of the occupants.

- A. A mechanic from the elevator company that services these elevators should be dispatched to the scene.
- B. Locate the stalled elevator by the following methods:
 - i. Check the floor indicator on the lobby enunciator panel.
 - ii. Check the floor indicator in the fire control room.
 - iii. Use the telephone system or intercom in the fire control room to make contact with the occupants.
 - iv. Take an adjacent car nearest to the stalled car and stop at each floor. Using a light look across the narrow space between the car and hoistway to locate the stalled car.
 - v. Take an elevator to the highest floor and try to make contact with the occupants by talking thru the elevator hoistway doors. Walk down each floor using the same method until contact is made.
 - vi. Shut down power and lock out the main line disconnect for the stalled elevator. This disconnect will be located in the elevator control room. Open the hoistway door at the lowest level, shine a light up the hoistway, and locate the stalled car.
 - vii. In older installations and freight elevators, the hoistway door may have a glass panel. Using a light, look for the car or the location of the counterweight. The location of the counterweight can be used to approximate the position of the car. For example, in a ten-story building, if the counterweight were located on the 2nd floor, the car would be near the 9th floor.
 - viii. Checking the level of the hydraulic fluid may give you an idea where the car is located.
 - ix. The controller located in the machine room may indicate the location of the stalled car. Newer installations have a LED indicator, which will locate the car, while older installations have a dial or arrow traveling left or right along a metal rod to show the location.
- C. After the stalled car has been located, communication with the occupant(s) is the next priority. Once communication has been established, convince and reassure the occupant(s) that they will be safely removed. Obtain information on the number of occupants, establish if they have any special needs, and instruct them on techniques for a possible self-rescue.
- D. On some incidents the occupants have activated the emergency stop switch. This activation removes power to the hoisting machine and activates a loud alarm. Unless needed, advise them not to activate this button. The alarm has the tendency to cause panic, confusion, and hampers communication.



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- E. Communication may be accomplished by the following methods:
 - i. Elevator car phone
 - ii. Elevator intercom system or fire alarm paging system (public address)
 - iii. Using a loud voice up the hoistway
Using a loud voice through the hoistway and car doors

IV. NON-EMERGENCY PROCEDURES WITH POWER ON

Unless there has been a general power outage in a building, a stalled elevator generally is the result of electrical part failure. It is common for dust to interrupt electric contacts. There are several maneuvers that may be attempted in order to restore power to the system and that would allow the occupant(s) to safely exit the elevator at a landing. If the main line disconnect was turned to the off position to locate the stalled car, restore power to the car.

- A. Common electric failures may include:
 - i. Faulty interlocks on hoistway doors
 - ii. Blown fuses
 - iii. Shorting electric cables
 - iv. Open switches
 - v. Breaks in operating circuits
- B. The following procedures should be attempted which may restore power to the system:
 - i. Press the lobby call button.
 - ii. Instruct the occupants to engage and disengage the emergency call button several times.
 - iii. Instruct the occupants to engage the door open button and floor button. At the same time have a fire department member at the closest floor landing to the stalled car, press and hold the hallway call button. If the driving vane on the car is in the landing zone it will engage the roller and the car door and the hoistway door may open.
 - iv. If the car is in the landing zone, interrupting the photoelectric eye may release the doors. Slide a stiff piece of paper or cardboard between the hoistway doors until the beam is broken; this may open the doors.
 - v. Have the occupant(s) ensure that the car doors are completely closed by pushing the door to the fully closed position. Have the occupant(s) shake the interior doors; this may loosen any dust blocking electric contacts.
 - vi. Have fire department members shake the hoistway door where the occupants entered the elevator.
 - vii. Have fire department members physically close all hoistway doors of the effected shaft. Air currents may have opened a hoistway door and tripped the interlock cutting the power to the car. If this is not successful shake all hoistway doors in the shaft that service the stalled elevator.
 - viii. Activate the fire-fighter service (Phase I) in the lobby or fire control room. This may return the car to the main lobby.

The above procedures (except the last bulleted point) will only work if the emergency stop button is not activated. If activated, the occupants must be instructed to deactivate the alarm.



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As a safety precaution, before any of the above procedures are attempted, a members should be stationed at the main line disconnect. If for any reason the car moves in an unsafe manner, the power should be shut off and locked out.

V. NON-EMERGENCY PROCEDURES WITH POWER OFF

Once the car has been located, communication with the occupant(s) has been accomplished, and attempts to remove the occupant(s) with the power on have failed, the power off procedures shall be initiated.

Power to stalled elevator driving motor must be removed and tagged. This is accomplished by sending a member to the elevator machine room and removing power from the main line disconnect for the effected elevator. Once power has been removed, the breaker must remain off until a certified elevator mechanic restores the elevator to proper working order. To ensure this power stays off, the breaker must be locked out by padlocking the switch. If no padlock is available, a member with a radio shall remain at the panel until the rescue has been completed.

There are two power sources for each elevator. The main line disconnect, which delivers power to the driving motor, is a large fused-knife switch or large circuit breaker usually found inside the machine room near the entrance door. When thrown, it stops the car and removes all operating power from the elevator.

The other power source is an auxiliary system, which delivers power to the car lights, fan, and music. The auxiliary circuit breaker panel frequently resembles the normal breaker box found in most homes. During elevator rescue this auxiliary power system must be left on to prevent panic of the occupants.

Each elevator will have its own set of electric panels and shut offs for the main line and auxiliary power. It is imperative that the power to the stalled elevator is shut down. Elevator power switch boxes and motors are required to be labeled in a manner that relates motor to switch, e.g., switch #1, motor #1. Elevator shafts are required to be numbered. The numbering system starts with the first hoistway on the left of the main building entrance and continues clockwise. If any doubt exists, open as many elevator power switches as required to ensure safe operation. Allow passengers to exit any properly operating car before removing power.

Once power has been removed from the stalled elevator, gaining access to the elevator car is the next step. On hydraulic elevators, the elevator may be lowered to the nearest landing using the manual-lowering valve by members trained specifically in this operation.

The hoistway door that is closest to the stalled car needs to be accessed and opened. One or more of the following methods may be used to open the hoistway doors:

- A. Elevator key(s)
- B. Breaking the photoelectric eye
- C. Pole down
- D. Pole across
- E. Pole up
- F. Glass panel access



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- G. Elevator pick tool
- H. Lowering to nearest accessible landing (hydraulic only)
- I. Forcing entry

With the hoistway door open, the elevator door will open with a minimum amount of pressure. The door may be opened by physically exerting pressure towards the door opening, overcoming the friction from the mechanical door motor located on top of the car.

Once the door is open, a fire department member shall enter the car and assist the occupants in exiting the stalled car. In some cases a folding ladder may be needed to facilitate the removal.

When the occupants have been removed, the hoistway and car doors must be shut and a fire department member must ensure the locking mechanism has engaged. If the hoistway and car doors cannot be closed, auxiliary power to the car should be shut off from the car or elevator penthouse.

VI. FORCING ENTRY

Forcing entry into a hoistway and elevator can be a very costly approach and may not achieve the desired results. Repairs after forcing a door may cost several thousand dollars. Power to all cars in the affected hoistway must be removed and all other cars in that hoistway evacuated.

Any type of spreading tool that will fit into the opening may be used to force the door. The tool must be inserted as high as possible to apply a more direct force to the linkage and locking mechanism. Forcing a door may push the door off or out of its tracks. It is possible for the doors to free-fall into the hoistway. Once the doors have been forced, it will be impossible to properly secure the hoistway opening before leaving the scene. This approach should be used as a last resort and only be used under emergency circumstances.