Section 7
LOCKOUT AND TAGOUT

General Requirements

The procedures outlined below are intended to prevent injury or death to employees by requiring certain procedures be taken before working on equipment. Unless it is not feasible (i.e., inspecting, troubleshooting, observing, etc.), employees shall not perform any work on equipment where there is a potential to be exposed to energized mechanical or electrical hazards until all sources of energy have been de-energized, grounded or guarded.

Equipment variations require the mechanic to know what car controls are available and operating; the mechanic must know what safety methods will be employed to gain control of the car. Never access the hoistway unless you have control of the car.

All forms of potential energy including electrical, mechanical, hydraulic, pneumatic, kinetic, gravity, etc. shall be controlled to prevent inadvertent movement of a unit or piece of equipment being worked on.

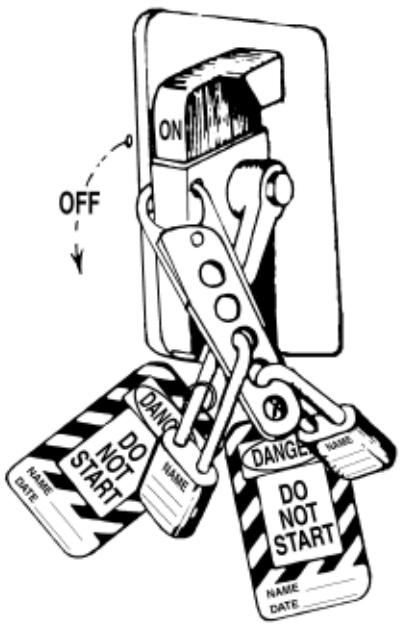
7.1 Procedures

(a) Understand the equipment; be aware of its potential hazards. If it is not understood, or if you have a question, contact your Superintendent/Manager immediately before proceeding.

(b) Where the accidental starting of the equipment would create a hazard – deactivate mainline disconnect switch to shut off the power. **CAUTION:** Do not stand directly in front of the mainline disconnect when operating **(stand off to the side of the disconnect)**. Each employee shall apply to the disconnect switch a personal lock and a "Do Not Start" tag with the employee's name (Section 5.3).

(c) Some components (capacitors, MG sets, etc.) often store residual energy, even though power is shut off. The stored energy can result in electrical shock or unintended movement of equipment. Before working on equipment with these components, discharge the stored energy to ground.
(d) When it is impossible to lock the switch, assurances shall be made that the circuit is deactivated and tagged out.

Figure 7a



(e) **CAUTION:** It is possible to have electrical energy on a controller that has had the mainline-disconnect switch deactivated. After initiating lockout and tagout, the lighting circuit may still be energized.

(f) Once the system has been locked out, verify with the appropriate test equipment that the system has been de-energized. (see Section 5.3)

(g) Before working on mechanical systems, make sure the system is understood. If there are any questions, get answers before proceeding. Such systems often store energy, even though the electrical power is shut off. The stored energy can result in violent movement of a machine part, such as a plunger or piston rod, when work is done on another portion of the equipment. If the portion of the system to be worked on can be isolated and the pressure in that portion of the system released by bleeding, it is not necessary to shut down the entire system. However, the valves and controls which could readmit pressure to the system being worked on shall be identified with "Do Not Start" tags and locked out. If a lockout is not possible, other positive action shall be taken to ensure that the equipment will not be energized. Check flanged connections, cylinder heads or plate-mounted components. The sticking of a gasket can hold the parts together, while bolts are removed, and then can come apart violently due to stored pressure.

(h) When working under a hydraulic elevator, devices such as jacks, pipe stands, etc. shall be installed to prevent the elevator from injuring workers in the pit.

(i) Each employee who performs duties described above will be provided with an individually keyed or combination lockout device and tags. If more than one employee is assigned to a task, each employee shall be responsible for placing their own lock and "Do Not Start" tag, so the controls cannot be operated.

(j) If controls are so located that only one lock can be accommodated, a multiple lockout device shall be used.
(k) Lockout devices shall be made available for locking out additional equipment.
(l) Where special devices are required to lockout circuit breakers, they shall be available and used.
(m) Lockout devices shall be returned to the Company when an employee transfers to other assignments or terminates.
(n) When switches are deactivated for service, repairs or alterations, they shall be locked out and tagged out.
(o) Before starting work on any equipment that is out of service, make a thorough check of all electrical control and starting devices. When any part of such equipment is remotely controlled, lockout and tagout the mainline disconnect and confirm that the system is de-energized [Section 7.1(f)].

7.1.1 Shift Changes

(a) When employees are ending their shift and/or other employees will continue work on the machine or equipment, the employees shall attach the company locks and tags and then shall remove their personal locks and tags.
(b) The new shift employees shall apply their personal locks and tags before beginning work on the machine or equipment. After the employees have placed their personal lockout mechanism and tag, and have verified that the system is de-energized the company locks and tags shall be removed.

7.1.2 Restoring Equipment and Machines to Normal Service

(a) All tools shall be removed, all guards and covers shall be reinstalled and the area shall be checked to insure that no personnel are exposed to the equipment or machine.

(b) The mechanic, after checking to make sure that no one is exposed to the equipment or machine, shall restore energy to it.
(c) After each portion of the work is completed, the individual who places the lockout mechanism shall be responsible for its removal. If more than one operation is performed on a piece of equipment, machine or system, it will be necessary for each individual to remove their lockout mechanism immediately after their work task has ended. The last individual to remove their lockout mechanism shall notify the customer that all work has ended.
(d) The unit shall be operated in the normal mode before returning it to service.
(e) Remove out of service tags.
(f) Notify the customer that the unit is back in service.

7.2 Supervisory/Emergency Removal of Lockout/Tagout

(a) If it is necessary to operate a piece of equipment which is locked out, every effort shall be made to locate the employee whose lock is on the equipment. If the employee cannot be located, and after positive assurance is made that no one is working on the locked out equipment, your Superintendent/Manager may personally remove the lock. The Superintendent/ Manager must remember that there is danger of the employee involved returning, thinking the machine is still locked out, when actually it has been reactivated. The Superintendent/Manager shall ensure that the equipment is, once again, locked out before the employee resumes work.

(b) If a machine is locked out and it becomes necessary to leave, recheck upon returning to make sure the machine is still locked out. While supervisors will make every effort to avoid removing locks, there may be situations when it must be done. The recheck is for your protection.

7.3 Lockout/Tagout Procedures for Escalators and Moving Walks

(a) The applicable procedures in Sections 7.1 and 7.2 apply to all employees who work on escalators and moving walks. Anytime work is to be performed within the interior plane of the steps/ pallets, it shall be locked out and tagged out to prevent the unit from starting unexpectedly.
(b) In addition to lockout/tagout, whenever working within the truss where 10% or more of the escalator steps are removed, a mechanical blocking device shall be activated to prevent the escalator from moving. If the unit is not equipped with a mechanical blocking device, the drive chain and/or step axles must be secured to the truss braces to prevent movement in either direction.
(c) Whenever steps are removed and the unit is going to be left out-of-service, the steps/pallets should be moved to cover the openings (whenever possible).

7.4 MRL Car Movement Locking Devices

Some machine-room-less elevators are equipped with special car movement locking devices that provide an independent method of securing the car. The cartop can then safely be used for performing maintenance, inspection, adjustments, or repairs to overhead equipment.

- Elevator suspension must be in place
- The device is typically located on the crosshead

- It shall have a sign stating “WARNING!” Engage before maintaining on inspecting brake, emergency brake or controller.