



A DIVISION OF WESCO DISTRIBUTION, INC.

Lockout/Tagout Ready Reference

Updated 10/2018

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1. The Law

A. OSHA 29 CFR 1910.147 – Lockout/Tagout

- Covers the servicing and maintenance of machines and equipment where the unexpected start-up or release of stored energy could injure employees
- Establishes minimum performance requirements for the control of such hazardous energy
- Requires employers to complete a [written energy control program](#), [employee training](#), and audits
- This standard applies to any major repair work, replacement, or modification made to equipment powered by electrical, mechanical, hydraulic, pneumatic, chemical, or thermal energy
- The standard must be used in any situation that places a worker in danger of the accidental release of stored energy. Specifically, this refers to repair or maintenance work for which a worker must remove or by-pass an equipment guard.
- Generally speaking, any equipment that can be locked out must be locked out

2. The Essentials

A. What Are the Definitions of Lockout and Tagout?

- **Lockout** – The placement of a lockout device on an energy isolating device ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed
- **Lockout Device** – A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment
- **Tagout** – The placement of a tagout device on an energy isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed
- **Tagout Device** – A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed

B. When Must a Lockout/Tagout Device Be Used?

- When service or maintenance is being performed on or around any machine where injury could result from unexpected start-up or the release of stored energy

- When new equipment or machinery is being installed
- When a guard or other safety device must be bypassed or removed
- When an employee must place any part of his body where it could be caught by moving machinery

C. What Are Some Common Lockout Devices?

- **Circuit Breaker Lockouts** – Many of the styles we offer are designed to help lock out most major brands of breakers. The goal of this plastic part is to isolate individual breakers in an electrical panel.
- **Valve Lockouts** – Designed to prevent fluid or gas valves from being opened while repair or maintenance is occurring. This could involve ball valves (handle you turn 90° to shut off) or gate valves (round knob; used for turning on your garden hose). Ball valve lockouts are measured by the length of the handle. Gate valve lockouts are measured by the diameter of the knob.
- **Plug Lockout** – Assists in locking out any electrical plug up to certain diameters
- **Pneumatic Fitting and Plug Lockout** – This multipurpose device can lock out electrical cords and male air hose connectors
- **Wall Switch Lockout** – Prevents workers from tampering with switches or accidental startup of equipment. Can actually lock a switch in the on or off position.
- **Adjustable Cable Lockout** – Commonly used to lock out electrical disconnects. Cable lockouts come in a variety of lengths in order to permit a user to lockout several isolation devices with one cable.
- **Hasps** – A lockout hasp allows more than one worker to put their padlock on an energy control device when more than one worker is performing maintenance on a given piece of equipment
- **Group Lock Boxes** – Are used for situations where multiple employees are engaged in the same lockout procedure. Once an isolation device is locked, that key is then placed inside of the group lock box. Each employee then locks a portion of the lock box. The key within the lock box cannot be removed until each employee has removed their lock.

D. What Are the Procedures for Lockout/Tagout?

Preparation and Notification

- Before servicing or installing equipment, workers must be able to answer the following questions:
 - What is the type of energy source on the equipment?
 - What are the potential hazards related to the energy source?
 - Who needs to be notified that the equipment will be shutdown for service?
- Once these questions have been answered, the worker would notify all affected employees that a lockout procedure is about to begin and that the equipment will be shut down for service

Shut Down the Equipment

- Employees should make sure all energy sources have been located and shut down, being aware that some machines have more than one power source

Isolate the Equipment

- Equipment should be isolated by doing the following, as it pertains:
 - Shutting off the main breaker or control switch
 - Closing valves
 - Disconnecting process lines
 - Pulling plugs
- Also, keep in mind when working with electricity:
 - Never pull an electrical switch while it is under load
 - When possible, disconnect a power source instead of using LOTO
 - If working on electrical components, always use a voltage tester to verify absence of voltage

Attach the Lock and Tag

- Each employee who is performing maintenance is responsible for locking and tagging the equipment
- Locks/tags must be provided by the employer

- Tags must contain warnings such as “Danger – Do Not Operate” and the employee must fill it out, as they provide information about:
 - Who is doing the work
 - What they are doing
 - When they will be done
- Employees should never use another employee’s lock and never lend their own
- If more than one employee is involved in the maintenance, multiple locking devices are required and a lockout hasp can assist with holding the multiple locks/tags

Release Any Stored Energy

- After locking and tagging equipment, you must make sure that any stored energy on the equipment is released. This is done by:
 - Inspecting equipment to make sure all parts have stopped moving
 - Bleeding stored electrical charge
 - Venting or isolating pressure or hydraulic line – leave vent valves open
 - Draining tanks and valves
 - Releasing the tension on springs or blocking the movement of spring-driven parts
 - Blocking or bracing parts that could fall because of gravity
 - Blocking, clamping, or chaining any switches or levers that could be moved into the start position
 - Clearing lines containing process materials that are toxic, hot, cold, corrosive, or asphyxiating
 - Monitoring the process to make sure that the work you are doing will not result in an accumulation of stored energy

Test Equipment to Verify That All Energy Has Been Released or Controlled

- To make sure that all kinetic and stored energy has been released or controlled, you must:
 - Clear personnel from danger areas
 - Test the start switches on the equipment to confirm that all power sources have been shut down and switches can’t be moved to the “on” or “start” position
 - Check pressure gauges to make sure that all lines are de-pressurized and stored energy has been released
 - Secure all blocks, clamps, chains, and cribs
 - Check electrical circuits to make sure that voltage is at zero
 - Secure blanks (used to block feed chemicals) and make sure they are not leaking
- If all tests are passed, employees can begin working on equipment

E. What Are the Energy Sources for the Different Types of Machinery?

- Whether the power switch is on or off, energy is always present in any powered equipment
- It’s important to understand and identify the energy sources that provide power for machinery or equipment that is going to be serviced:
 - Electrical – Electrical control panels, breaker boxes, etc
 - Pneumatic – Air pressure
 - Hydraulic – Fluid under pressure
 - Mechanical
 - Fluid and Gases
 - Thermal
 - Water Under Pressure
 - Gravity
- Energy comes in two types:
 - **Kinetic (Moving) Energy** – The force caused by an object’s motion
 - An example of kinetic energy is the energy released by a spinning shaft as it turns
 - **Potential (Stored) Energy** – The force stored in an object that isn’t moving
 - An example of potential energy is a suspended load.

F. What Are the Basics of Padlocks?

- **Keyed Different Locks** – Each lock is keyed differently and has two keys which open only that lock

- **Keyed Alike Locks** – Each lock has two keys which will open any lock in the group. These are used so that an employee only needs to focus on using one key to open up several locks.
- **Master Keyed Locks** – A master key opens all locks in the group, even though each lock has its own individual key. This option must be ordered at the same time as the locks.

- Locks must be dedicated and used only for lockout procedures
- Locks are commonly color coded to help identify work groups, functions, or shifts of employees. The colored lock also helps identify that it is used for lockout procedures, not for security reasons.
- An employees lock can be cut off or removed if that employee has left the building and forgot to take the lock off provided:
 - The company knows the exact whereabouts of the employee and why the lock had not been removed
 - A supervisor or lead has confirmed that the work environment is now safe and has been cleared of employees before removing the lock and re-energizing the power source

G. What Are Lockout Kits?

- While no kit usually has the exact ingredients that a given customer needs, these kits are designed to provide a variety of devices, locks, and tags to accommodate various work situations
- We encourage customers to find the kit that best matches their lockout scenario and simply add any additional items that would round out the kit to best match their facilities' needs
- Lockout kits and equipment need to be visible and readily accessible as needed

3. Product Reference

- A. Signs and Labels
- B. Lockout/Tagout Video Training Program
- C. Lockout Safety Posters
- D. Lockout/Tagout Center or Station

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