

# VISION ZERO

## Lockout Tagout - How to Control Critical Risks by LoTo?

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PRACTICE



# Lockout Tagout - How to Control Critical Risks by LoTo?

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## What is lockout tagout (tryout)?

- ▶ Lockout tagout is the de-energizing and securing of equipment, machinery or processes so hazardous energy isn't re-introduced during servicing or repair. This includes closing electrical circuits and valves, neutralizing extreme temperatures, securing moving parts and more. Tryout means testing all related energy sources for verification of zero-energy state.

## A brief history of lockout tagout (LoTo)

It had been invented in the US, however lockout tagout plays today a major role in worldwide workplace accident prevention.

The OSHA lockout tagout standard for the Control of Hazardous Energy (Lock-out/Tagout), Title 29 Code of Federal Regulations (CFR) Part 1910.147, was developed in 1982 by the United States Occupational Safety and Health Administration (OSHA) to help protect workers who routinely service equipment in the workplace. Legally, it went into effect in 1989. Ever since, the lockout standard has played a vital role in keeping employees safe on the job. Key lockout tagout statistics (OSHA statistics only for US figures) demonstrate that lockout programs:

- ⇒ Save lives by preventing an estimated 50,000 lockout tagout injuries and 120 fatalities annually in the US [1];
- ⇒ Cut costs by decreasing lost employee time and insurance costs;
- ⇒ Improve productivity by reducing equipment downtime.

## What is the difference between lockout and tagout?

Lockout occurs when an energy source (electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other) is physically isolated from the system that uses it (a machine, equipment or process). This is done using a variety of lockout padlocks and devices best suited for specific applications. Devices such as circuit breaker lockouts or valve lockouts can be used for more specific lockout jobs



Tagout is the process of affixing a label, or tag, that communicates information about what's being done to the machine or equipment and why it's important. Details on a tag may include:

- DANGER or WARNING lockout tag
- Instructions (e.g., Do Not Operate)
- Purpose (e.g., Equipment Maintenance)
- Timing
- Name and / or photo of the authorized worker

Tagout alone is not recommended as it does not provide a physical means to prevent equipment from re-energizing. Since the inception of the lockout tagout standard in 1989, energy isolation points have been modified or replaced to allow for safety padlock placement, and new devices have been developed to retrofit energy sources to help meet the standard.

“ The lockout standard has played a vital role in keeping employees safe on the job. ”

When used together by affixing a tag to a padlock, lockout and tagout provide enhanced protection for workers against re-energization.



### Lockout tagout program components and considerations

A typical lockout program can contain more than 80 separate elements. To have, for example, an OSHA-compliant lockout tagout program (also applicable for all countries outside OSHA region) must include:

- Lockout tagout standards, including creating, maintaining and updating equipment lists and hierarchies;
- Task-specific procedures;
- Workplace regulations, such as confined space entry requirements.

Periodic inspections are required. As a best practice, an annual review of lockout procedures is recommended.

Other best practices include:

- Program standardization
- Lockout tagout software
- Annual authorized / affected training (authorized will be more frequent)
- Updating isolation points
- Management of change
- Contractor training
- Device inventory

The host employer often will have greater familiarity with the energy control procedures used at the host facility. However, according to 29 CFR §1910.147(f)(2)(i) -exemplary for US regulations, but analogously applicable for other countries-,

the host and contract employers are required to inform each other about their respective energy control procedures.[2] Such coordination is necessary to ensure that both sets of employees will be protected from hazardous energy.

The contractor must take the reasonable lockout tagout steps, consistent with its authority, to protect its employees if the contractor knows, or has reason to know, that the host's energy control procedures are deficient or otherwise insufficient to provide the requisite protection to its employees.

Lockout tagout requirements for paperwork vary by company and the case of application. However, a best practice is to have a log of all servicing that requires lockout with sign-out sheets of all isolation devices. Any permits needed to complete the service (hot work, confined space or working at heights) should be copied and kept with the service log. Keeping devices and documentation together is a best practice, usually achieved through use of a permit control station.

### Understanding lockout tagout procedure requirements

OSHA and other regulations worldwide allow the grouping of same or similar equipment and procedures to ease the burden of periodic inspections. A best practice is to have a specific procedure for each individual machine posted on or near the machine. Even if you have two identical machines, it's still preferred to have a procedure for both. This helps prevent confusion and demonstrates your thoroughness to inspectors.

Some companies develop generic lockout tagout procedures and supplement them with checklists or appendices to address various, distinct equipment as part of their lockout system. This type of procedure may be considered a single energy control procedure (instead of multiple procedures) for inspection purposes if all of the criteria for grouping same or similar equipment is met. However, if checklists or appendices address equipment that does not all use the same or similar types of control measures, the employer is required to divide machinery and equipment into groups based on the same or similar types of control measures.

Once this is accomplished, an employer may inspect and review the generic energy control procedure in conjunction

with each distinct group of equipment referenced in the relevant checklists or appendices.

You need machine-specific procedures for all equipment at your facility, even if contractors are the only people authorized to work on the equipment. Further, even if there are no authorized employees, training is required for all employees and a periodic (best practice: annual) procedure review needs to be complete, with any changes communicated to the contractors before servicing.

Authorized contractors can write machine-specific procedures, though these procedures are best developed by employees familiar with the facility to ensure the correct disconnect is being used. Outside contractors unfamiliar with the equipment may miss an energy source if the authorized employees are not involved in verifying the procedures achieve a zero-energy state.



Generally, the transfer of responsibility can be accomplished by the incoming shift accepting control of a system prior to the outgoing employees releasing control of that system. The orderly transfer of personal lockout tagout devices between out-going and incoming employees must ensure there is no gap in coverage between the outgoing employees' removal of lockout devices and the incoming employees' attachment of devices.

The OSHA standard specifies only mechanical devices and tags must be used. For example, an authorized employee watching a switch in place of a device while another authorized worker performs equipment maintenance is not allowed. While convenient, OSHA specifically indicates a method such as this is not as reliable as a mechanical device. Testing electrical components with a meter is recommended to verify isolation when testing at the control panel is not possible. There are a few ways to verify pressure has been

bled out. Noise is a common practice for compressed air lines since dump valves make a loud noise when releasing pressure. Depending on the location of the isolation point, connecting air tools to the line to bleed off the line is another way to verify de-energization.

## The major steps in implementation of an effective lockout tagout system

- ▶ Evaluation current status
- ▶ Selection of appropriate, fitting padlock-system, tags and LoTo equipment
- ▶ Create and establish fitting LoTo-procedures
- ▶ Implementation of LoTo-system (step by step, start with a pilot installation)
- ▶ Training
- ▶ Best Practices
- ▶ Initial audit/annual Audit

## References

- [1] OSHA files about Lockout Tagout.
- [2] 1910.147 - The control of hazardous energy (lockout/tagout). Occupational Safety and Health Administration.
- [3] BG RCI about Lockout Tagout (German).
- [4] Swiss SUVA includes LoTo in their „Eight Vital Rules for Maintenance“ (German)





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