

# What's Not to Love About LO/TO?

Lock out/Tag out (LO/TO) is an essential safety control for all machines (both electrical and mechanical). It is an engineered control comprised of a system of locks, blocks, and/or tags that prevent the release of unexpected energy.

**Lock out** is a physical process that aims to stop the energy of a piece of equipment at its source. A typical scenario is that a power switch, circuit breaker, or valve is turned off, and a locking device is attached to prevent the power from being turned back on.

**Tag out** is a written warning on a tag that describes the tag out procedure. The tag displays the name of the service person and the duration of time that the machine will be LO/TO. When a lock cannot be placed on a machine, a tag may be used in its place.

Locks and tags must have the same format. They must be easy to read and durable enough to withstand the work environment.

## Who can perform LO/TO procedures?

Only employees who have attended annual training and have received permission from their shop supervisor can conduct LO/TO procedures. Training must cover how to identify live parts of machines and read voltage. Trained workers must be provided with locks and tags that clearly indicate who has locked and tagged the machine.

## Which types of machines require a LO/TO program?

All machines that are powered by kinetic energy or have stored potential energy must undergo LO/TO. Kinetic energy simply means any force that is caused from movement. Potential energy is stored, and can be released by electricity, pressurized liquid, pressurized gas, or springs. In other words, all machines must be LO/TO.

## When should LO/TO procedures be used?

Any machine that is being serviced or maintained must be LO/TO. This includes lubricating, cleaning, un-jamming, removing guards, or when the body comes close to parts. The only person(s) allowed to undo a LO/TO procedure is the person(s) that implemented it.

From: UCLA Shop Safety Manual

## What steps must be taken when implementing Lock out/Tag out?

1. Notify all coworkers before beginning LO/TO and verify that they are a safe distance from the machine. Identify any potential hazards and the energy source used in the machine.
2. Shut down the energy of the machine at the local and main power source. Sometimes there may be more than one local source.
3. Isolate the energy sources by using chains or blocks to prevent unexpected movement. Bleeding, venting, etc. may also be needed.
4. Connect the designated lock or tag to the energy control(s). Each user should have their own lock, tag, and key. Place the locks and/or tags so that they are clearly visible.
5. Test the machine to ensure that no energy is flowing. Turn "on" the local switch control(s) to make sure that zero energy is reached. Be sure to turn them "off" before moving to the next step.
6. When service or maintenance is complete, remove all tools and keep the energy switches in the "off" position.
7. Remove the lock and/or tag. The individual(s) who placed the lock or tag is the only person(s) authorized to remove it.
8. Make sure coworkers are a safe distance from the machine. Turn on the energy and test the machine for proper operation. Notify other workers that the machine is operational again.

Employees must follow LO/TO procedures and must not take short cuts. EH&S recommends an annual in-house LO/TO audit to maintain or correct the LO/TO program and help keep workers safe. Be sure to file audit information with the training records.

Call EH&S for help in developing a LO/TO program, completing audits, and training employees.

# Lock-Out/Tag-Out Checklist

- 1. Identify all sources of electrical energy for the equipment or circuits in question.**
- 2. Disable backup energy sources such as generators and batteries.**
- 3. Identify all shut-offs for each energy source.**
- 4. Notify all personnel that equipment and circuitry must be shut off, locked out, and tagged out. (Simply turning a switch off is NOT enough.)**
- 5. Shut off energy sources and lock switchgear in the OFF position. Each worker should apply his or her individual lock. Do not give your key to anyone.**
- 6. Test equipment and circuitry to make sure they are de-energized. This must be done by a qualified person.\***
- 7. Deplete stored energy by bleeding, blocking, grounding, etc.**
- 8. Apply a tag to alert other workers that an energy source or piece of equipment has been locked out.**
- 9. Make sure everyone is safe and accounted for before equipment and circuits are unlocked and turned back on. Note that only a qualified person may determine when it is safe to reenergize circuits.**

**\*OSHA defines a “qualified person” as someone who has received mandated training on the hazards and on the construction and operation of equipment involved in a task.**

*From UCLA Shop Safety Manual*