



Lock Out Tag Out Procedures (LOTO)

FORMS: [Lock Out / Tag Out Form & Log](#)
[Lock Removal Form](#)

PURPOSE: To establish procedures to protect all persons from injury due to the unexpected release of energy while they are working on or around machinery, piping systems, vessels, or other sources of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, radiation or gravitational energy.

RESPONSIBILITY: The Contractor is responsible to coordinate Lock outs through the Maintenance Facilities and PD&C department and is never allowed to shut off any utility.

PROCESS:

During construction, demolition, or startup activities, each person required to place any part of their body within a point of operation of powered machinery or system, containing stored energy or having the potential to release other forms of energy or potentially dangerous substances, shall install a lock and tag on the equipment to prevent operation of the machine or system, to prevent the release of such, if any unexpected operation or release can cause injury to any person or damage to property. Once the lock is applied, the machinery or system "start" method must be tested to ensure a proper lockout has been achieved.

Examples would include, but not limited to, moving machinery, clean-in-place (CIP) pipe and valve systems, steam and condensate pipe and valve systems, confined spaces, mash cookers, ammonia systems, elevated pallet hoists, packers, all pipe lines which open into confined spaces, shell presses, pneumatics and conveyors.

NOTE: OSHA's general requirements for control of hazardous energy (lockout and tagout) are to be found in 29CFR1910.147, but that standard specifically exempts construction. However, the lockout standards for construction in 29CFR1926.417 are limited almost exclusively to electrical applications, so they are unsuitable for construction work in an operating facility where non-electrical hazards exist. In addition, 29CFR1926 does not refer to the differing roles and responsibilities on a job-site. Consequently, the following procedures will be used, unless the host facility requires that its own procedures be used on work managed by Corporate Engineering.

PROCEDURES

1. Persons Affected

Each person, when working on a piece of powered equipment or on a system which contains stored energy, and who is thereby placed at risk of injury, will place a lock and tag on the appropriate energy isolating device(s), such as electrical disconnects, fluid valves, control air valves, or blanks, or on a lock box, to prevent operation of the machine or system.

- (a) There will be only one key for each lock. Duplicate keys are prohibited.
- (b) The Owner will maintain a set of numbered locks, keys, and tags for use by owners Representatives Personnel only. Locks, keys, and tags shall be signed out as needed, and logged as per c. below.
- (c) Each employer shall maintain a log of locks issued for use, to whom they are issued, and the system or approximate location at which each lock is to be used, and when the lock was removed.



- (d) Lockout tags will not be used for non-lockout purposes, e.g. to convey operational information.
- (e) Lockout locks shall not be used for any other purpose.

2. Testing (“Lock, Tag, and Try”)

After any machine or system has been locked out and tagged, and before any other work is done by any person, the machine or system shall be tested to verify the effectiveness of the lockout. Where applicable, the test can be an attempt to start operation; a visual inspection of blanks, locks, parts which have been removed, or blocks or clamps which have been installed; atmospheric testing; the taking of pressure readings from existing gauges or instruments; or voltage checks. On more complex systems, such as CIP manifolds or conveyor grids, or where any attempt to operate could result in damage to the system, an appropriate testing procedure will be planned in advance, recorded on the attached form, and a copy placed in the field office files; and, upon execution of the test, a record kept of the test and the results. If the facility has a written procedure for locking and testing specific equipment or systems, a copy of that procedure shall be used for the testing required by this bulletin, if not, a procedure listing the requirements for the particular lockout shall be developed. This procedure shall list items such as switches, valves, breakers etc to be locked. A copy of the appropriate procedure shall be located near the primary lock and tag. The copy shall be turned into the owner representative upon completion of the work.

3. Personal Lockout Requirements

When **any** person is working on a machine, system, etc., and so is at risk of injury, that person will place a lock and tag to prevent operation of the machine or system. The Owner Field Representative **must** place a lock and tag, and a plant representative may place one before any person can attach their personal lock and tag. The person placing the lock will retain the key in his or her possession and will remove the lock and tag at the completion of the work, or whenever he or she leaves the site.

- (a) Where a lock cannot secure the machine or system against unexpected operation, some other suitable means, such as blanks, chains, wedges, or blocks will be used. Such devices must render the machine or system inoperable and will be tagged.
- (b) If the person is a contractor or vendor employee, that person can request confirmation of the effectiveness of the lockout by testing the operation or witnessing any tests performed by others.
- (c) The tag shall identify the person, his or her employer, the date and time the tag was placed, and the machine or system being locked out.

4. Group Lockout

Where two or more persons are working on a machine or system, each person will place his or her lock and tag on the machine or system. Multiple lock hasps shall be used, if needed. A lock and tag will be placed by the Owner Representative and the persons who are at risk.

- (a) If it is not practical for each person to place a lock and tag directly on the machine or system to be locked out, primary locks and tags shall be so placed by the Owners Authorized Representative. The Owners Representative will then place the primary keys into a lock box. The Owner will also place a lock and tag on the box.



- (i) Machine or system configuration may require that more than one primary lock will be needed. Their keys will all be placed in the box.
- (b) Each person who is working on the machine or system, and their supervisors, will place a lock and signed tag upon the lock box. (The CE shall have six-hole lock hasps available for use if they are needed.)
 - (i) If startup is in progress, the Owners Representative may designate a Plant operations startup engineer to be responsible for primary locks and the lock box.
- (c) Before work begins, the Owners Representative and the persons who will be at risk, or their supervisor, will test the machine or system to verify the lockout is effective.
 - (i) If work involves existing machines or systems, use plant specific procedures, if available. The owner representative will consult with facility persons familiar with the machine or system operations and their energy isolation devices. The Owners Representative shall include contractor supervision in the consultation meetings.
 - (ii) The necessary exchange of information should be included in the Disruption of Operations procedure.
 - (iii) Contractors will train their personnel in the type and magnitude of energy to be encountered and how it is to be controlled prior to the start of the lockout sequence.
- (d) If facility personnel are working on the same machine or system, they may install their own lockout/tagout system, or they may use the Construction system. Which procedure to use should be determined based on the complexity of the lockouts, durations of the work, location of the work etc. Whether combined or separate, communication of the number and location of the primary locks and tags must be clear to all parties. A coordination meeting must be held to communicate responsibilities between all groups involved.
- (e) At the completion of work, or if intermediate operation is needed, each worker shall remove his or her lock from the lock box. The Owner representatives lock and tag shall be the last to be removed.
 - (i) If a worker has left the job site without removing his or her lock and tag, that worker's supervisor shall follow the lock removal procedure (See Para. 7f.) The supervisor may then remove the lock and tag and note the removal on the tag. That worker should then be re-trained in the lockout procedure, and the re-training will be documented.
- (f) Before removing the primary lock(s), the Owner representative shall advise all persons working around the system that the system will be restored to its operating condition. All switches shall be confirmed to be in the "OFF" position, and all physical restraints shall be removed before startup is attempted.
- (g) If work extends beyond one shift, workers from the first shift shall remove their locks and tags, and workers from the second shift shall install theirs. The primary locks may be left in place and the authorized person may be properly transferred and noted on the primary lockout tag.



5. Contractor Procedures

If contractors have lockout and tagout procedures which differ from the above, but which offer adequate protection under the circumstances of the work to be done, the owner representative may authorize, with facility concurrence and via a written record, the use of that procedure. The procedure must comply with either OSHA 29CFR1926.417 or with 29CFR1910.147 as a minimum. If the work to be done will affect existing operations, the owner representative will confirm in the minutes of the coordination meeting that the facility Director and the contractor understand each other's procedures.

6. New Machinery and Systems

On new machinery or systems, lockout and tagout procedures shall be used as soon as the machines or systems are energized, charged, or so installed that electrical, hydraulic, pneumatic, spring gravitational or other stored energy can cause harm.

7. Locks and Tags Not Removed

- a. It is the responsibility of employees to remove their own locks and tags when work is completed.
- b. Employees remembering that they have left locks and tags in place after having left the project site, have a responsibility to call in and report the details to their supervisor owners site representative who will notify the appropriate supervisor.
- c. In cases where locks and tags have been inadvertently left on, removal may be directed only by the on-site supervisor for the affected department, the owner representative, or the contractor's authorized person.
- d. Prior to any such removal, steps must be taken to assure that the employee is not on site, that no other employees are involved with the locked out equipment or system, and that all affected employees have been notified. Attempts will be made to reach the employee by phone.
- e. If the employee cannot be reached, employee will be notified that their lock and tag was removed in their absence when they return to work.
- f. A record of each incident will be maintained by the CM/GC using the LOCK REMOVAL FORM. A copy of the Lock Removal Form will be sent to the owner representative for investigation and file.

8. Discipline

Except as noted in Paragraph 4(e) of these procedures, no person will remove the lock (**including hasps**) or tag of another. Persons who do remove the lock or tag of another are subject to disciplinary action, including removal from the construction site.

ANNUAL LOTO PROCEDURE REVIEW

1. Each year the CM/GC and the owner representative will review the LOTO procedures for their site and contractors and ensure they are complete and supportive of each other. This review must be documented and kept on file in the construction field office and copy to owner representative.



STANDARDIZED LOCK AND TAG COLOR SCHEME

a. General

A multi-colored lock and tag scheme shall be developed for site. The objective would be to have separate and distinct colors for the major organizations: plant, Construction and contractors. Although, all sites currently have different kinds and descriptions of LOTO locks and tags, they shall move to a standardized set of equipment, as outlined below.

a. Plants

The plants may have different color coding schemes already in place, with locks and tags color coded as primary and personal, and/or color coded per department or craft.

b. Construction

Construction will adopt a standardized lock and tag for all sites, except if the standardized color conflicts with established plant colors. The lock color will be orange and the standard lock will be by American Lock (Part 1106N). These locks can be ordered with customized engraving, such as numbers or CD etc. A standardized orange colored tag holder is available from Grainger, stock # 5UV27. This tag holder will be used for all CD tags for easy distinction and verification of CD lockout locks. The tags will be Grainger, stock #9JK69.

c. Contractors

Contractors will be **required** to obtain color-coded locks as well as color coded tags. The color will be purple and the standard lock will be by American Lock (Part 1106U). The standardized purple colored tag is also available from Grainger, stock #9CRV2. The contractor's color-coded tags may be obtained from the plant storeroom at plants that have the colored coded requirements for their contractors.

"GREEN TAG" REQUIREMENT

In addition to the standard requirements of the lock-out/tag out a "Green Tag" (LOCK, TAG & TRY (LOTO) Verification Check List will also be required.

Any time a lock and/or tag is used on a single, multiple, or group lock out / tag out device and designated person will also be required to complete and attach a copy of the "Green Tag" (LOCK, TAG & TRY (LOTO) Verification Check List).

The designated person coordinating the LOTO of a piece equipment is responsible for completing the Green Tag prior to work commencing. This individual will fill out the top section titled "LOTO Installation", sign and date the tag. The Green Tag shall then be placed on the

primary lock on the single source or on the lock box where it is visibly available to any other employee who may be attaching their lock. Other employees attaching their locks do not have to sign the green tag, just the designated employee who initiated the lock out.

At the completion of the job, a designated employee (this may be a different person if the job goes over multiple shifts) will verify that the job is complete and then fill out the bottom section titled "LOTO Removal (After Work Completion)" section, sign and date the Green Tag.



The requirement to use the checklist applies to contractor, construction, and plant personnel on all lock-out/tag-out situations.

After the checklist is completed it will be turned into the owner construction representative and checked for accuracy.

