

## Introduction

The purpose of this Lockout Tagout (LOTO) Program is to establish minimum standards and safe work practices for performing lockout tagout to control the release of hazardous energy during servicing and maintenance activities on production equipment and machinery (e.g., owned, leased, rented, etc.) in which the unexpected energization or startup, or the release of stored energy, could harm cast and crew members. In addition, ensuring compliance with Federal and local regulatory requirements applicable to Control of Hazardous energy and Lockout Tagout (LOTO).

## Terms & Definitions

### Affected Crew Member

A crew member who is required to use machines or equipment on which servicing, or maintenance is performed under the lockout tagout standard, or who performs other job responsibilities in an area where such servicing is performed.

### Authorized Crew Member

A crew member who performs lockout tagout on machines or equipment during servicing or maintenance.

### Other Personnel

All cast, crew, visitors, and third-party contractors who are or may be in an area where energy control procedures may be utilized.

### Capable of being locked out

An energy-isolating device is capable of being locked out if:

- It is designed with a hasp or other means of attachment to which a lock can be affixed.
- It has a locking mechanism built into it.
- Can be locked out without dismantling, rebuilding, or replacing the energy-isolating device or permanently altering its energy control capability.

### Energized

Connected to an energy source containing residual or stored energy.

### Energy Source

Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. Examples include, but are not limited to:

- Pressurized systems (tanks, cylinders, and plumbing containing oil, water, air, fuel, or coolant)
- Electrical energy sources including transmission and distribution lines, building systems, batteries, generators, and capacitors
- Vacuum systems (pressure below atmospheric pressure)
- Mechanical motion (flywheels, counterbalances, and rotating members)
- Gravity
- Springs (under compression or extension force)
- Radiation sources (RF, microwave, satellite, etc.)
- Thermal and cooling systems (where hazardous residual heat and/or cryogenic materials may be encountered)

- Residual, chemical materials that can cause pressure or thermal buildups
- Robotics (robots or robotic arms/systems)
- Adjacent energy sources (don't forget to lockout/tagout adjacent energy sources that can affect the area you are working in)
- Lasers

## Energy Isolating Device

A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following:

- Manually operated electrical circuit breaker
- Disconnect switch
- Manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and in addition, no pole can be operated independently.
- Line valve, block, or any similar device used to block or isolate energy

**Note: Push buttons, emergency stops, selector switches and other circuit-type or computer operated control devices are not considered "energy isolating devices".**

## Lockout

The placement of a lockout device on an energy-isolating device, in accordance with an established procedure, 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, blank flanges, and bolted slip blinds, to hold an energy-isolating device in a safe position, thereby preventing the energizing of machinery or equipment.

## Servicing and/or Maintenance:

Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the worker may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

## Tagout

The placement of a tagout device on an energy-isolating device, in accordance with an established procedure, 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 in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

## Zero Energy State

A verifiable condition that eliminates any source of energy from accidentally energizing or moving machines, equipment, or systems while servicing or maintenance is being performed.

## Roles & Responsibilities

### Production Management (UPM/LP/AD)

- Support this safety program by having full knowledge of the requirements and alternatively, knowing how to evaluate activities and situations where hazards can be eliminated or controlled.
- Ensure all department heads and supervisors are properly trained in the requirements of this program, in order to implement all requirements.
- Ensure sufficient resources are available for implementing this program.
- Ensure the requirements of this program are enforced.

### Department Heads & Supervisors

- Ensure LOTO equipment specific procedures have been created for all machines and equipment that have multiple sources of energy. Copies of procedures should be maintained and updated as needed.
- Ensure all cast and crew members affected by lockout tagout (LOTO) procedures receive proper training.
- Identify who will be dedicated authorized crew members for LOTO tasks.
- Confirm that all authorized crew members required to implement LOTO procedures have received proper training.
- Inspect LOTO procedures and practices to ensure the lockout tagout procedures are being followed.
- Certify that periodic inspections have been performed.
- Provide and maintain necessary lockout tagout equipment and resources (e.g., locks, tags, etc.)
- Enforce the requirements of this program.

### Production Safety

- Provide technical expertise and guidance on lockout tagout related concerns with affected departments.
- Audit compliance with this program.

### Affected Cast and Crew Member

- Know and understand the purpose of this program.
- Do not tamper with or remove any lockout tagout devices.
- Do not attempt to start, activate, or cycle any machines or equipment under energy control.

### Authorized Crew Member

- Complete authorized persons training prior to applying energy control procedures.
- Follow the proper application and removal of lockout tagout devices as trained.
- Notify your department head prior to proceeding with LOTO activities, including identifying any hazardous or unsafe conditions.
- Use, inspect, maintain, and store energy control equipment properly.
- Inspect all energy control equipment prior to use. If defects or damage are found, equipment shall be immediately removed from service and reported to the supervisor.
- Apply your designated lock and tag before performing service or maintenance.
- Verify all energy sources are locked out, controlled and at zero energy state prior to initiating service or maintenance.
- Notify affected crew members before the application of energy control and before re-energization of machines or equipment after the removal of the energy control.

## Lockout Tagout Process

### General

- All productions must implement lockout tagout when performing servicing or maintenance on machines or equipment as outlined by this program.
- Only trained and authorized crew members shall isolate the hazardous energy and verify the machine or equipment is at a “zero-energy” state before performing any maintenance or service of a machine or equipment, where the unexpected start up or release of hazardous stored energy could occur.
- When working with electrical equipment, only a qualified electrical worker is authorized, and required to complete this step with appropriate personal protective equipment (PPE) and verification tools. Refer to the [Electrical Safety Guidelines](#) for further information.
- The de-energization or re-energization of hazardous energy during lockout tagout shall only be performed by authorized crew members who have received required training and are familiar with the specific machine, equipment, or system.
- When an authorized crew member de-energizes equipment or machines to support work being performed by another authorized crew member or contractor, both authorized crew members and all other parties shall install a personal lock and a tag. Everyone performing work must have a designated lock and tag.
- Prior to the start of service or maintenance work, an initial assessment, by reviewing the written procedure if applicable, shall be made to determine which switches, valves, or other energy isolating devices apply to the equipment and should be locked out.

*NOTE: More than one energy source (e.g., electrical, mechanical, hydraulic, pneumatic, chemical, thermal, gravitational) may be involved and the lockout point may not be near the physical location of the equipment.*

- If a crew member has a question regarding the lockout tagout process of equipment, they shall consult their department head, supervisor or another trained and authorized crew member.
- Any affected crew members and others at the work location shall be notified before lockout tagout is initiated and again, prior to the release of lockout tagout.
- Equipment or machines in close proximity to the machine or equipment being maintained or serviced, which may pose a hazard by the nature of their operation, shall also be locked out and tagged out.

### Exceptions

This program does not apply to work performed during normal operations or inspections of equipment and machinery, unless either of the following are true:

- A crew member is required to remove or bypass a guard or other safety device.
- A crew member is required to place any part of their body into an area on or in a machine, piece of equipment, or ride system which constitutes a hazard while in operation.

This program also does not apply to the following:

- Work on “Cord and Plug” connected electric equipment for which exposure to the hazards of unexpected energizing or startup of the equipment is controlled by the unplugging of the equipment from the energy source and the plug is under exclusive control of the crew member when performing the servicing or maintenance.

## Standard 8-Steps for Lockout Tagout

The following eight steps shall be followed in sequence when service or maintenance activities on machines or equipment, require the use of lockout tagout.

The steps for lockout tagout will only be performed by a trained and authorized crew member or qualified third-party contractor, wearing the proper PPE, who is trained on and familiar with the specific machine or equipment.

### Step 1 – Prepare for Shutdown and Notify Others

Perform the following prior to starting lockout tagout:

- Ensure that shutdown can be done safely and will not adversely affect other operating systems.
- Notify operators, users, and other affected personnel that shutdown will occur and lockout tagout will be in effect.
- Identify all energy sources associated with the machine or equipment (e.g., electrical, mechanical, pneumatic, hydraulic etc.).

### Step 2 – Shutdown the Machine or Equipment

- If the machine or equipment is in operation, prepare the equipment to be in the proper position (state) in which service or maintenance is to be performed.
- Refer to manufacturer's shutdown procedures or the equipment specific lockout tagout procedures (if applicable).

### Step 3 – Isolate All Energy Sources

- Using the appropriate operating switches, circuit breakers, valves, pumps, or other devices, ensure all sources of energy are disconnected and isolated to prevent energy from being re-applied to the machine or equipment during the maintenance or service activity.
- Where mechanical, gravitational, or thermal energy is present, ensure appropriate measures or blocking devices are used to prevent movement.

### Step 4 – Apply the Lock and Tag to the Energy Isolating Device

- Place the lock and a tag on each isolating device used to disconnect/isolate energy from the equipment to ensure the device remains in the "safe" or "off" position during the maintenance or servicing activity.
- Ensure all locks have a tag which is properly filled out and indicates the authorized crew member or Third-Party Contractors name, company, or department, contact number, the date if applicable.

### Step 5 – Dissipate Stored Energy

- If the machine or equipment is capable of storing energy (e.g., springs, accumulators, capacitors, gravitational), the stored energy must be dissipated to a safe level and prevented from re-accumulating during the maintenance or servicing activity.
- If the machine or equipment is capable of storing thermal energy, ensure that sufficient cooling time has elapsed and verify safe temperature prior to maintenance or servicing activity.

### Step 6 – Verification of Zero Energy State

- Attempt to activate the machine or equipment using the normal operating controls to verify all energy has been isolated prior to beginning the maintenance or servicing activity.
- In many instances, verification must be made by use of diagnostic test equipment in addition to or in place of using its normal operating controls.
- Each trained and authorized crew member participating in the lockout tagout process shall either personally verify the machine or equipment is isolated or witness the verification process.

## Step 7 – Remove Lock and Tag

When maintenance or servicing activities are complete, perform the following:

- Inspect the work area around the machine or equipment and its components to verify they are operationally ready for restart.
- Verify all safety guards are re-installed.
- Remove the lockout tagout devices.
- Trained and authorized crew member's lock must be the last lock removed.

## Step 8 – Release from Lockout Tagout and Notify Others

After the last lock and tag is removed, the authorized crew member who applied device shall:

- Check the area to verify all other personnel are in the clear.
- Notify operators, users, or other affected persons that lockout tagout devices are being removed and energy will be reapplied to the machine/equipment.
- Restart the machine or equipment, if required, using its restart procedure (refer to manufacturer operating manual).

## Documenting Written Procedures

Documented lockout tagout procedures are required for equipment and machinery where there are multiple energy sources requiring multiple lockout devices.

- When documented procedures are deemed necessary, procedures shall be documented by a trained and authorized crew member using the [Lockout Tagout Equipment Specific Procedure – Template](#).
- Contact your Production Safety Representative for further information and guidance.

## Exclusions for Written Procedures

A documented Lockout Tagout Procedure is not required when all the following elements exist:

- The machines, equipment or systems have no potential for stored or residual energy or re-accumulation of stored energy after shut-down, which could endanger cast and crew members.
- The machines, equipment or systems have a single energy source which can be readily identified and isolated.
- The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
- The machines, equipment or systems are isolated from that energy source and locked out during servicing or maintenance.
- A single lockout device will achieve a locked-out condition.
- The lockout device is under the exclusive control of the trained and authorized crew member performing the servicing or maintenance.
- The servicing or maintenance does not create hazards for other cast and crew members.
- There have been no prior accidents involving the unexpected activation or re-energization of the machine, equipment or system during service or maintenance.

**IMPORTANT NOTE:** While equipment may meet requirements for exclusions from having a written procedure, authorized crew members performing work must still follow the Standard 8-steps of LOTO. The Standard 8-Steps of LOTO will guide trained and authorized crew members through the application of LOTO to any required equipment. Equipment specific manufacture operating manuals should also be referenced.

## Lockout/Tagout Hardware

- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware should be approved and provided by production management.
- All approved devices will meet applicable regulatory requirements for being durable, substantial, identifiable, and standardized.
- Lockout devices must not be used for any other purposes than LOTO.
- Each authorized crew member shall be designated a lock with their name or other means of individual identification conspicuously affixed to it. The lock assigned to an authorized crew member shall only be used for the purpose of complying with lockout procedures.
- Only approved devices provided by the production can be used for LOTO.
  - Productions can contact their Production Safety Representative or the manufacturer for device selection assistance.
- Please refer to the [Lockout Tagout Device Examples](#) document for further guidance.

## Removal of another Person's Lock and Tag

Each lockout device shall only be removed from each energy isolating device by the authorized crew member who applied the device.

**Exception:** When the authorized crew member who applied the lockout device is not available to remove it, that device may be removed under the direction of the department head or supervisor in accordance with the following procedure:

- The identification of the authorized crew member who originally placed the lockout device should be determined from the information tag on the lockout device.
- Every attempt will be made by the department head or supervisor to locate and contact the authorized crew member. If the authorized crew member is contacted, they will be informed that the lockout device is being removed.
- If an authorized crew member cannot be contacted, the department head or supervisor will ensure that the authorized crew member is not still at the working location.
- Upon return to the working location, the authorized crew member will be notified by the department head or supervisor that the lockout device was removed.
- The lockout device will be removed by the authorized department head or supervisor, or an authorized crew member designated by the department head, by following the appropriate procedures.

## Group Lockout Procedures

Complex or large equipment may involve multiple crew members and multiple work shifts. Before any group LOTO is implemented, the procedure should be reviewed with all Authorized and Affected crew members. The procedure should include the following:

1. Department head or supervisor should assign one authorized crew member to be the lockout coordinator of the LOTO procedure for the group LOTO project.
2. Each authorized crew member will affix their lock and tag to the equipment being serviced at the determined isolation point.
3. No crew member will be allowed to remove anyone's lock or tag. Each authorized crew member will remove their own lock or tag when their part of the operation is completed.
4. When service or maintenance involves more than one shift, members of the outgoing shift will remove their locks and tags and the members of the incoming shift will apply their locks and tags. This process will be overseen by the lockout coordinator.
5. When equipment has room for only one lock, the coordinator of the procedure will place their lock on the equipment and place the key in a group lockout device (e.g., group lockout box). Each authorized crew member will affix their lock to the group lockout device.

## Contractors

- Third parties performing work requiring application of a LOTO program will need to follow their own written program adhering to all federal, local and authority having jurisdiction (AHJ) requirements.
- Provide a copy of the written LOTO program to the affected department head or supervisor.
- Third parties will need to communicate the effect of their operation on both AUTHORIZED and AFFECTED production crew members and protect them from the work area (e.g., area closure, barriers, etc.)
- Third parties will be responsible for providing and maintaining their own Lock-Out/Tag-Out equipment and supplies. The Production will not loan or provide equipment to a third party.

## Equipment-Specific Procedure Inspections

Department heads and/or supervisors should conduct inspections of each Equipment Specific LOTO Procedure, to ensure the procedure is effective and that its requirements are properly followed. The following is a list of inspection requirements:

- Inspections are to be performed annually (minimum once per production) for each Equipment Specific Procedure.
- An authorized crew member other than the one(s) using the energy control procedure must perform the periodic inspection and complete the inspection form (LINK).
- The department head or supervisor must certify that the inspections have been performed.
- The certification must identify the machine or equipment on which the energy control procedure was used, the date of the inspection, the crew members included in the inspection, and the name of the person performing the inspection.
- The certification should be maintained by the production.
- The inspection should include a review of the written procedure and the inspector observing the authorized crew member conducting the equipment to which the procedure is written for.
- Any deviations or inadequacies observed must be corrected.



- The LOTO inspection must occur on each individual Production. Inspections are not valid from past completed Productions.

## Training

- All **authorized crew members** and their supervisors shall be trained and demonstrate proficiency in:
  - Recognition of types and magnitudes of hazardous energy sources.
  - The procedures and hardware necessary to de-energize and control hazardous energy sources.
  - Equipment and activities required for the application of this program.
  - Limitations of tagout.
- All **affected crew members** and their supervisors shall be instructed in the purpose of the lockout tagout program and the use of the lockout tagout procedure. They shall be instructed not to attempt to restart equipment that is locked out or tagged out.
- **Retraining** shall be provided to crew members under the following circumstances:
  - Change in an authorized crew members work assignments.
  - Introduction of new hazards or new equipment requiring lockout tagout.
  - Alteration of the lockout procedure.
  - Whenever department heads believe the crew members knowledge or use of the lockout tagout procedure is inadequate.
- Training must be provided before any crew member can participate in Standard or Equipment Specific LOTO procedure.
- Crew members must demonstrate proficiency in the training they receive. One way to document proficiency is to perform a mock LOTO procedure and observe performance.
- Documentation of training must be maintained by the production.

**Please contact your Production Safety Representative for further guidance and assistance.**