While every effort has been made to assure the information provided herein is complete and accurate, it is not intended to take the place of published rules, statutes or regulations concerning lockout/tagout procedures. The contents may not be relied upon as a substitute for the most current official text or information.

**Master Lock Company LLC does not assume any responsibility for omissions, errors, misprinting, or ambiguity contained within this publication and shall not be held liable in any degree for any loss or injury caused by such omissions, errors, misprinting, or ambiguity presented in this presentation.**

This presentation is designed to provide reasonably accurate and authoritative information in regard to the subject matter covered and is current to the date of release. It is given with the understanding that any Master Lock Company employees associated with the presentation and/or publication of these lockout/tagout training materials are not engaged in rendering legal or other professional services. If legal advice or other expert assistance is required, the services of a competent professional person should be sought.

Your individual lockout/tagout policies may be more restrictive than the minimum requirements set forth by the American National Standards Institute (ANSI) or the Occupational Safety and Health Administration (OSHA) regulations and must be followed as directed.
Key LOTO Statistics

Failure to properly control hazardous energy:

- Causes nearly 10% of serious accidents leading to an average of 24 lost work days for injury recuperation
- 248 deaths in 2012 related to electrocution or being caught in running equipment or machinery*
- Thousands of serious injuries are caused annually by the failure to effectively lockout equipment
- Lock out Tag out violations are consistently among the Top 10 OSHA Industrial violations every year and usually in the Top 3 of OSHA citation related fines.
  - #5 in FY2015 - Control of hazardous energy (lockout/tagout)
- Lock out Tag out related injury claims and deficiency concerns are among the most commonly listed actionable items by insurance company loss prevention and risk evaluation experts and negatively impact workers compensation and property/casualty premiums.

*Source: Bureau of labor statistics
OSHA and ANSI Lockout Tagout (LOTO) Standards

OSHA outlines “The What” and ANSI outlines “The How” for LOTO

- **The What: OSHA LOTO Standard**
  - Title: The Control of Hazardous Energy (Lockout/Tagout), CFR 29, Part 1910.147
  - This regulatory standard is intended to prevent the *unexpected* energization or start-up of machinery and equipment, or the unintentional release of stored energy, that could severely injure or even kill employees during maintenance and service.
  - Primarily focuses on general industry
    - Specific standards provided for marine terminals, long shoring, and the construction industry

- **The How: ANSI LOTO Standard**
  - Title “Control of Hazardous Energy—Lockout/Tagout and Alternative Methods” (ANSI/ASSE Z244.1-2003 (R2008))
  - Industry consensus standard, not law unless cited in OSHA regulations
  - Establishes best practices and details specific methods/examples of how to implement
What is Lockout Tagout?

Lockout/tagout is the process of controlling hazardous energy during the service and maintenance of machinery and equipment

- Specific work safety procedures and practices that safeguard employees from:
  - The unexpected powering or start up of machinery or equipment
  - The release of hazardous energy during service or maintenance activities

- Hazardous energy sources are isolated and inoperative before any maintenance procedure is started

- Facilities are responsible for developing a LOTO program which clearly outlines the process for isolating hazardous energy
  - How to lockout each piece of equipment
  - Who is authorized to complete LOTO
  - Use of padlocks and devices
**How is Lock out different from Tag out?**

**Lockout** Involves the placement of a secured lockout device on an energy isolating device such as a valve, breaker or disconnect switch, 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.

- OSHA requires that if an energy isolating device is capable of being locked out, a lock must be used to secure the device, unless it can be clearly demonstrated that the utilization of a tag out system will provide equivalent full employee protection.

**Tag out** Involves the placement of prominent warning tags on energy isolating devices with a secure means of single use attachment, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag and control device is removed. In addition – at least one other method of protecting personnel must also be utilized during tag out.
When does LOTO need to be used

Generally, normal production operations are **not** covered by the standard. But they are covered whenever . . .

- An employee must either remove or bypass machine guards or other safety devices, resulting in exposure to hazards at the point of operation;

- An employee is required to place any part of his/her body in contact with the point of operation of the operational machine or piece of equipment;

- or the employee is required to place any part of his or her body into a danger zone associated with a machine operating cycle.

According to the standard, servicing and maintenance are defined to include the following:

- constructing, installing, setting up, adjusting, inspecting, modifying, lubricating, cleaning or unjamming machines or equipment, and making adjustments or tool changes.
Limited allowances are made for:

Minor tool changes, servicing activities and adjustments do not require LOTO to be applied so long as they are “routine, repetitive, and integral to the use of the equipment” for production— as long as the work is performed using alternative measures of effective protection.

- Alternative measures must assure that the worker won’t be harmed during these exceptions because a safe distance or an adequate temporary shielding method is used to protect them against accidental movement or energization. **Use a JHA to document the methodology.**

- Interlocked guards or emergency stops are not considered effective protection by themselves because they only affect control circuitry and not the actual energy sources that could cause harm.

**BEST PRACTICE:** Be conservative when determining if this allowance applies to a production task. If you are not actively supporting a productive process (i.e. not fixing a problem) and someone could get hurt, this exception clearly does not apply.
Certain tasks in the workplace may require potentially hazardous energy sources be available in order to complete testing, setup, positioning, robotic training, and other critical activities. In some instances, full energy isolation may impact workplace efficiency, resulting in compromised data or long restart times of machinery. Other maintenance tasks may also periodically require partial energization in order to complete important work.

When full lockout is reasonably determined and documented to not be practical, procedures using alternative methods can provide a level of worker protection that is essentially equivalent to a zero-energy condition. OSHA recognizes alternative methods as exceptions to lockout for routine and repetitive production-related activities.

Alternative methods can be a valuable part of a safe, compliant work environment and can protect workers while increasing their efficiency when full lockout is difficult or impossible to perform. Procedures using alternative methods establish best practices to help reduce or eliminate the hazards of unexpected startup and the possibility for the harmful release of energy and should follow these steps:

- evaluate the need for energy to be present
- perform risk assessments
- document alternative procedures to help safeguard personnel

*Alternative procedures are created following a job safety analysis/risk assessment format. The development of all machine-specific alternative procedures will follow the ANSI/ASSE Z244.1 (2016) standard.*
Cord and Plug Exception

The cord and plug exception for LOTO is only valid if:

- the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the worker performing the servicing or maintenance.
- Only one worker is performing the servicing or maintenance.
- The cord and plug is the single energy source with no potential for stored energy of the device.
  - Frequently the single worker and exclusive control requirements are not strictly adhered to with accidents being the common outcome.

**BEST PRACTICE:** This exception is frequently abused, hard to monitor, difficult to enforce, and has resulted in many accidents. If you are not actively monitoring proper use of this exception LOTO is the best practice to use while working on cord and plug connected equipment.
Written Procedure – Single Energy Source Exception

Because of the simplicity of many common machines, OSHA does not require a written LOTO procedure to be prepared if all these circumstances are met:

1. There is one identifiable energy source powering the machine
2. There is no potential for stored/residual energy, or reaccumulation of stored energy
3. Equipment is able to be isolated from energy source and **has to be locked out**
4. Isolation and locking out completely deenergizes/deactivates equipment
5. One locked energy control device achieves a locked-out condition
6. The one lockout device is in view and under the exclusive control of the **one** authorized person performing the servicing, repair or maintenance
7. The servicing task does not create hazards for Affected/Other employees
8. There have been no previous accidents/injuries due to unexpected activation/re-energization of this machine during servicing, repair or maintenance activities

**BEST PRACTICE:** Even if this exception applies to the equipment you are working on – you must still apply LOTO (unless it is a cord and plug connected device). Clearly itemize the equipment you have qualified that meets this exception. Your Authorized employees should know what makes the list, and what needs a written procedure.
## Hazardous Energy Sources

Hazardous energy comes in many different forms, all of which are potentially harmful to workers.

<table>
<thead>
<tr>
<th>Type of Energy</th>
<th>Electrical</th>
<th>Mechanical</th>
<th>Hydraulic</th>
<th>Pneumatic</th>
<th>Chemical</th>
<th>Thermal</th>
<th>Gravity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example of Sources</td>
<td>Electrical work</td>
<td>Rotating machinery</td>
<td>Lines, pumps and cylinders</td>
<td>Compressed air system</td>
<td>Chemical dispensing</td>
<td>Refrigeration / heating units</td>
<td>Shifting or falling objects</td>
</tr>
<tr>
<td>Residual Energy</td>
<td>Capacitors and secondary or backup circuits</td>
<td>Spin down time, torque release, load shift movement</td>
<td>Captured pressure in lines or equipment</td>
<td>Captured pressure in lines or equipment</td>
<td>Toxic or flammable liquid or gas residue</td>
<td>Warm up or cool down period</td>
<td>Release of power or linkage causes movement</td>
</tr>
<tr>
<td>Potential Dangers</td>
<td>Burns, electrocution, shock, equipment damage</td>
<td>Amputations, lacerations, fractures, crushing injuries</td>
<td>Similar trauma from movement, hydraulic oil injection injuries</td>
<td>Similar trauma from movement, embolic air injection injuries</td>
<td>Skin and, eye injuries, inhalation injuries, organ damage</td>
<td>Heat burns, heat exhaustion frostbite, hypothermia</td>
<td>Amputations, lacerations, fractures, crushing injuries w/trapping</td>
</tr>
</tbody>
</table>
Hazardous Energy Impacts

Serious injuries are often indirectly caused by unexpected releases of hazardous energy

- Injuries occur as often for operational personnel (Affected Employees) as they do for maintenance workers (Authorized Employees)
  - Falls due to an electrical shock, not the shock itself, causes a major injury
  - Electrical arc flash explosion causes injury to nearby workers
  - Chemical release or a resulting fire forces evacuation of the workplace
LOCK OUT TAG OUT

PROGRAM REQUIREMENTS
## OSHA Requirements: LOTO Program

### Minimum program requirements for OSHA Compliant Lock out /Tag out

<table>
<thead>
<tr>
<th>Program Element</th>
<th>Description</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="lockout.png" alt="" /></td>
<td>Written Program and Machine specific lockout procedures</td>
<td>Details of methods and responsibilities. Clear instructions ensure authorized employees know the process and order for locking out equipment</td>
</tr>
<tr>
<td><img src="training.png" alt="" /></td>
<td>LOTO training for authorized and affected and “other” employees</td>
<td>Employees are prepared to recognize their duties under their employer’s LOTO program</td>
</tr>
<tr>
<td><img src="padlocks.png" alt="" /></td>
<td>Adequate supply of appropriate lockout devices and padlocks</td>
<td>Hazardous energy sources can be securely and safely locked out</td>
</tr>
<tr>
<td><img src="auditing.png" alt="" /></td>
<td>Annual auditing of written procedures and authorized personnel</td>
<td>Verifies that procedures are accurate and updated to reflect current equipment</td>
</tr>
</tbody>
</table>
Visual lockout procedures identify the required steps for locking out hazardous energy sources

- A machine specific lockout procedure is required for any equipment with:
  - More than one energy source
  - Unique power connections
  - A particular sequence of steps required to shut down the equipment

- A common method of hazard assessment includes:
  - Identifying the Machine Type
  - Serial number and/or identification
  - Itemize all energy source(s) and include the Order of Magnitude of the energy source i.e. 480V, 100PSI, 300F
  - Identify the isolation method/device
  - Identify residual hazards or other conditions that may create exposures
Lockout Procedures

BDP Enhancements:
- Each energy isolation point in the procedure should have a unique identifier

  - ARB2 CP-1 Control Panel
  - ARB2 E-1 Electrical
  - Gas
  - Pneumatic
  - Steam
  - Valve
  - Water

- Create machine specific LOTO Kits
- Add matching Isolation ID tag to key ring or Laser Engrave Locks with isolation descriptions
- Add the lockout device part number to list of devices needed. - Reduces guess work.
- Chain LOTO lock next to each isolation point
Lockout Procedures

Lockout procedures outline the appropriate steps that an authorized employee must complete to adequately lockout equipment

- Includes the rules, regulations, and various techniques that can be employed in the control of hazardous energy, such as:
  - Procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy
  - Procedural steps for the placement, removal and transfer of lockout devices or tagout
  - Instructions for testing a machine or equipment to verify the effectiveness of lockout devices, tagout devices, and to the energy control measures
  - A Best Practice is to post a user friendly copy at each equipment location for easy reference

**BEST PRACTICE:** Provide easy access to the procedures that are used often by posting them near the point of use. Be sure to write up a new procedure following a checklist approach prior to working on an undocumented machine. The procedure doesn’t have to be pretty to be effective and make you compliant.
Regular, periodic inspections must be carried out at least annually to ensure that employees are following energy control procedures

- The intent of periodic inspections is to confirm:
  - Energy control procedures are implemented properly
  - Employees are familiar with their responsibilities
  - Deviations or procedural inadequacies are corrected

- Inspections performed by an authorized employee who is not involved in the energy control procedure being inspected

- Periodic inspections must identify any deficiencies or deviations and then correct them

**BEST PRACTICE:** Auditing is best done progressively throughout the course of the year. Break down the number of authorized personnel to be audited and divide over 9 months. That leaves 3 months to catch the ones you missed. Be attentive to what equipment is being locked out so you can audit the written procedure when it is actively being used. Use the 9 mo./3 mo. strategy to have plenty of time to meet OSHA LOTO procedure audit requirements
Employee Training and Communication

Employees must be trained so they understand the purpose and function of the LOTO program

- According to the OSHA standard, employers are responsible for providing the following:
  - effective initial training
  - certification that training has been given to all employees covered by the standard.
  - periodic retraining as necessary

- Through training, employees acquire the knowledge and skills necessary for the safe application, usage and removal of energy isolation devices

- **Authorized employees** must receive training on the recognition of applicable hazardous energy sources, the type and magnitude of the energy, and the methods for energy isolation and control

- **Affected employees** must receive training on the purpose and use of the energy control procedures and to stay away while LOTO has been applied in the work area

- **Other** – These peripheral personnel need to basically recognize the lock out program exists and how to recognize locked out equipment in the workplace
There are THREE types of employees involved in a Lock out program

- Amount and kind of training that each employee receives is based upon:
  - The relationship of that employee's job to the machine or equipment being locked or tagged out
  - The degree of knowledge relevant to hazardous energy that he/she must possess - need to know

**BEST PRACTICE:** Realistically optimize the number of your Authorized personnel so those who will have to come in contact with machine action areas are properly trained and equipped. Most companies do not train enough Authorized personnel and rely on maintenance personnel or crew leaders to be called in to help. Take a real world look at who is opening guarded areas without protection and either train them to be Authorized to LOTO or make them aware of the consequences if they do not wait for assistance.
Employee Retraining

Periodic re-training is required to ensure all employees are kept updated on LOTO program changes

- Employees must be retrained under the following circumstances:
  - A change in job assignments
  - A change in machines, equipment, or processes that present a new hazard
  - A change in the energy control procedures
  - Periodic inspections reveal that there are deviations in the energy control procedure
  - The employer believes that there are deviations from, or inadequacies in, the employee’s knowledge or use of the energy control procedures

**BEST PRACTICE:** Document deficiencies in the form of a spontaneous LOTO audit that specifies retraining as a corrective action. This gets the problems noted on the record, helps you to prioritize corrective action, and makes your auditing program very timely and demonstrates it’s effectiveness
Lockout Verification

As an important precautionary measure, the authorized employee must check to confirm that:

- The equipment is properly shut down
- The energy sources have been isolated
- Lockout and tagout devices are in place
- Residual energy sources have been neutralized
- The equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by trying to make the machine function using the normal operating control(s) to make certain the equipment will not operate
- Metered testing of electrical circuits by qualified personnel may also be required for certain tasks

Once a zero energy condition is verified, return all tested controls to their “off” position

BEST PRACTICE: Electrical Safe Work Practices requires meter testing of electrical circuits to verify zero energy if a contact shock/burn hazard could exist. Be sure personnel who do this testing qualified to perform this skill when working around open conductors.
Group Lockout

When servicing and/or maintenance is performed by group of authorized workers, they can use a procedure that provides a level of protection equal to each placing personal lockout device at each energy control point.

This involves:

- Identifying an Authorized Lock out Leader who is responsible for the effective lock out of equipment according to the written procedure established for it to ensure the protection for all participating in the work to be done.

- Group lockout devices shall be placed at all energy control points or all control locks used shall have their keys placed in a group lockbox and additionally secured by the Lockout Leader placing an additional personal lock that secures the control keys.

- All participating Authorized personnel have the opportunity to verify the proper lockout procedure has been followed to provide a zero energy condition in the machinery they will be working on.

- All participating Authorized personnel must add their personal lock to each group lockout device, or the group lockbox securing the control keys and must remove their personal lock(s) when he or she stops working on the machine or equipment being serviced or maintained.

**BEST PRACTICE:** Know the jobs in advance that will require a group lockout and preplan what technique will work best to assure you have sufficient time to coordinate personnel and enough LOTO equipment to perform the job.
Group Lockout

When servicing and/or maintenance is performed by group of authorized workers, they can use a procedure that provides a level of protection equal to each placing personal lockout device at each energy control point.

- Temporary employees only identified by employer and not by name.
- Equipment only locked out by sanitation supervisor. Sanitation employees not issued a lock or tag.
Each employee should have the ability to protect their own life with a lockout lock.

FOOD FACILITY SANITATION CREW BEST PRACTICE: Assign a lockout leader to lockout equipment and then supply locks and tags to sanitation crew.
Working with Contractors / Shift or Personnel Changes

Whenever outside personnel are hired to perform work on premises involving activities covered by the Lock out standard, the following must take place:

- The hosting employer and the contractor must inform each other of their respective lockout or tag out procedures.
  - Determine whose energy control program will be applied to the contracted work to be performed
  - Provide existing LOTO written procedure to contractors for the equipment they will be working on.
  - Assure that new procedures are prepared for all undocumented equipment to be serviced or newly installed before workers are exposed to potentially hazardous conditions.

- The host employer shall ensure their employees understand and comply with the restrictions and prohibitions of the contractor’s energy control program
  - (if it is chosen as the applicable program for the work to be performed)

- The host employer should be sufficiently aware of the contractor activities to recognize if procedures are being followed and precautions are adequate to prevent accidents.
  - Formal inspection is not required or commonly recommended.

- If feasible - Do Not borrow equipment to contractors. Their preparation should have provided for the necessary gear and a sufficient amount of lockout equipment to perform their work safely.
Shift or Personnel Changes

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tag out protection

■ This includes providing for the orderly transfer of lockout or tag out device protection between off-going and incoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

■ Shift or Personnel Changes
  – Changes in task must be coordinated and details communicated
  – Locks/devices changed together to assure continuity of lockout and avoid overlooking LOTO devices that may have to be removed by the emergency procedure if the off-going employee is unavailable

■ Be sure to notify incoming Affected Employees that lockout is in place

■ Be sure to re-test all operating controls to verify energy is truly neutralized
  – don’t count on the last crew to verify your safety
  – Replace controls in off/neutral position
Emergency Removal Requirements

Locks/Tags may only be removed by the Authorized Employee who affixed the lock/tag.

If it becomes necessary to remove a lock/tag that has inadvertently been left by an employee, the following steps must be followed:

1. Notify the person’s supervisor.
2. Ensure that the person is not on the premises.
3. Attempt to contact him/her at home.
4. Management authorizes the removal of the lock/tags according to the emergency removal procedure.
5. Document the removal activity.
6. Notify the Authorized Employee prior to his/her returning to work.
LOCK OUT TAG OUT
DEVICE OVERVIEW
OSHA Guidelines: Lockout Devices

The OSHA Lockout Tagout standard outlines a number of compliance criteria for safety padlocks and lockout devices.

Requirements per OSHA 29CFR 1910.147 standard

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Master Lock LOTO products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Durable: Manufactured with materials that withstand usage environment</td>
<td>✓</td>
</tr>
<tr>
<td>Substantial: Can’t be removed without excessive force</td>
<td>✓</td>
</tr>
<tr>
<td>Standardized: Clearly differentiates from other devices by color, shape or size</td>
<td>✓</td>
</tr>
<tr>
<td>Identifiable: Indicates employee that installed lockout device</td>
<td>✓</td>
</tr>
<tr>
<td>Exclusive for safety: Not to be used for purposes other than controlling energy</td>
<td>✓</td>
</tr>
</tbody>
</table>

- Lockout devices and padlocks must meet all criteria in order to be considered OSHA compliant.
Lockout Devices Overview

Durable: Capable of withstanding the environment to which they are exposed

- Weather
  - UV
  - Wind, Precipitation

- Chemical
  - Industrial chemicals

- Temperature resistance
  - Extreme hot/cold

BEST PRACTICE: Request the assistance of a lockout product specialist to help assess the challenging exposures your LOTO equipment will be used in and recommend locks and LOTO devices that will stand up to your working environment.
Lockout Devices Overview

Substantial: Can’t be removed without excessive force

- Lockout devices can’t be removed without the use of excessive force
  - Ex: use of bolt cutters or prying off
- Tags must withstand OSHA’s 50 lb. pull force requirement
- LOTO devices are a deterrent to tampering or accidental removal, not a security device
Lockout Devices Overview

Standardized: Clearly differentiated from other devices by color, shape or size

- Safety padlocks must be visually differentiated in style and/or color from security padlocks within a facility
  - Ensures that workers easily identify LOTO procedures

**BEST PRACTICE:** Using colored padlocks for LOTO clearly differentiates them from a security padlock

- OSHA Interpretation Letter #24379: *Color is not the only prescribed factor for the standardization of lockout and tagout (LOTO) devices. At a minimum, a lock's shape, or size, or color must provide employees with the capability to identify and distinguish a lockout device from other similar devices (e.g., security locks) in the workplace.*

Pictured: A red 410 plastic safety padlock is clearly differentiated from a standard security padlock.
Lockout Devices Overview

Identifiable: Indicates employee that installed lockout device

- Lockout devices must clearly identify the employee that installed the lockout device
  - Employees know who to contact with questions or issues

**BEST PRACTICE:**
Utilizing ID customization options on padlocks and devices clearly identifies authorized employees for a LOTO procedure

<table>
<thead>
<tr>
<th>Employee ID Options</th>
<th>Padlock Labels</th>
<th>Laser Engraving</th>
<th>Key Stamping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Padlock labels</td>
<td>Padlock Labels</td>
<td>Laser Engraving</td>
<td>Key Stamping</td>
</tr>
<tr>
<td>include write-on and</td>
<td>Permanently add</td>
<td>Permanently stamp</td>
<td></td>
</tr>
<tr>
<td>photo options</td>
<td>employee name,</td>
<td>employee name,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>dept. or other</td>
<td>dept. or ID number to keys</td>
<td></td>
</tr>
<tr>
<td></td>
<td>info to padlocks</td>
<td>number to keys</td>
<td></td>
</tr>
</tbody>
</table>
Lockout Devices Overview

Identifiable: Indicates employee that installed lockout device

- Lockout devices must clearly identify the employee that installed the lockout device
  - Employees know who to contact with questions or issues
Lockout Devices Overview

Exclusive for Safety: Not to be used for purposes other than controlling energy

- Lockout devices must only be used for safety lockout
  - Using for other purposes can confuse workers and affect their ability to correctly identify hazardous energy sources

Pictured: An S806 cable lockout device being used to secure a ladder to prevent relocation.
Common Observations

Tagout vs. Lockout

- Tagout being implemented without additional method of protection as required and when lockout is possible.
- Tagout also being used as a departmental lock.

Pictured: A modified tag being used for tagout where lockout should be used instead.
Recommended BDP’s

“What’s wrong with this picture?”

- Commercial padlocks are synonymous with security – not safety. This lock is not singularly identifiable as a safety lock by means of engraving or labeling.

- Chain is not solely purposed for controlling hazardous energy and not singularly identifiable as a lockout device.

- Chain is loose and does not positively control the EID.

- Tag does not identify the authorized individual.

- Tag is cardstock and may not withstand the environment.

- Tag is affixed with string and is already starting to tear through. According to OSHA - Tag out device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum breaking strength of no less than 50 pounds.
One Lock, One Key Per Employee

The one lock, one key per employee principle recommends that each employee is assigned padlock(s) with a unique key code

- Ensures employees can’t open each other’s locks
- An employee can carry any number of locks with the same key combination for convenience (keyed alike)
- The employee who applies a lock should be the only person that can remove it
- Master keyed systems are permissible as long as the master key is securely controlled per the facility’s LOTO policy

Pictured: Master Lock offers a complimentary Lifeguard™ key record keeping service to ensure unique key codes are assigned to each employee

Best Practice: Employers should keep a record of key codes assigned to each employee so that duplicates are not introduced within a facility
OSHA allows the use of KA and MK keying options as long as the LOTO policy clearly indicates how the systems are utilized and controlled.

**Padlock Keying Options**

<table>
<thead>
<tr>
<th>Keyed Different</th>
<th>Keyed Alike</th>
<th>Master Keyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each padlock has a unique key</td>
<td>Multiple locks open with the same key</td>
<td>A group of locks is opened by its own change key as well as by a master key for the entire group. Employed when hierarchical access to locks is required</td>
</tr>
</tbody>
</table>

- The use of a master key to remove a lockout device is permitted if performed under the employer's direction and in accordance with the requirements established in 1910.147(e)(3). Source: OSHA website.
Padlock Systems

System size requirements are a key criteria to determining which type of padlock is best suited for a specific working environment.

<table>
<thead>
<tr>
<th>Padlock System Sizes</th>
<th>1.4K changes (4-pin)</th>
<th>10K changes (5-pin)</th>
<th>10K changes (5-pin)</th>
<th>40K changes (6-pin)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Size</td>
<td></td>
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<tr>
<td>1.4K changes (4-pin)</td>
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<tr>
<td>10K changes (5-pin)</td>
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<tr>
<td>40K changes (6-pin)</td>
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<tr>
<td>10K changes (5-pin)</td>
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<tr>
<td>40K changes (6-pin)</td>
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</tr>
</tbody>
</table>

- Must account for current and future system expansion requirements
  - Employee turnover, new hires, contractors all require new padlocks
  - Recommend current requirements plus 30% for most facilities

- Aluminum padlock standard config. includes 5-pin cylinder (10K changes). Can be upgraded to 6-pin cylinder (40K changes)

- Selection between 6-pin aluminum and plastic determined by usage environment and other feature requirements

**BEST PRACTICE:** Request the assistance of a lockout product specialist to help assess your working environment and recommend a system configuration to best meet your needs
Padlock Systems

System size is not static. Employee turnover, expansion and other factors contribute to the continual need for additional padlocks

**Ex: #3 Safety Locks** (1400 Key Changes)

- As new padlocks are added to a system, the available key changes are exhausted
  - In the example above, all 1400 available codes are utilized by 2013

**Best Practice:** With 40K key changes, a 6 pin lock is recommended to ensure sufficient codes are available for future expansion
A lock is not just a lock!

1. **No safety cylinders in #3 or standard A1100 locks.** These locks also typically come with two keys per lock, which is not ideal for safety. Extra keys, that are not controlled, can leave potential for exclusivity of control of lockout devices to be lost. Commercial security #3RED locks are not recommended for LOTO for the following reasons:
   - Only 1400 key changes available for a 4-pin W1 cylinder, compared to a 6-pin safety cylinder with 40,000 key changes
   - Commercial security locks look too similar to security locks available at any retail store.
   - Commercial security locks come with two keys per lock, which is not ideal for safety.
   - Spare keys are regularly left uncontrolled
   - Laminated locks are heavy for users to carry
   - Customization / identification is limited to hard stamping with minimal characters
   - If using commercial security locks for LOTO, you would not want to have locks in your facility by a similar appearance or utilize the same keyway that could unlock one of your LOTO locks
   - Keys are too easily duplicated and the W1 keyway is the same that is offered at local hardware stores
   - Keys are small and easily break off when the cylinder becomes contaminated with debris
   - Individuals may have keys onsite from personal locks that could work in lockout locks due to the common keyblanks
## Padlock Systems

### Safety Series Locks – Highest Level of Safety

<table>
<thead>
<tr>
<th>Series No.</th>
<th>S6835</th>
<th>S1100</th>
<th>410</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colors</td>
<td>Black, Blue, Green, Orange, Red, Yellow</td>
<td>Black, Blue, Brown, Clear, Green, Orange, Purple, Red, Yellow</td>
<td>Red, Yellow, Green, Teal, Black, Blue, Purple, Orange</td>
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<tr>
<td>Body Material</td>
<td>Powder Coated Aluminum</td>
<td>Anodized Aluminum</td>
<td>Thermoplastic</td>
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<tr>
<td>• S6835</td>
<td>1.0&quot; (25.4mm)</td>
<td>1.0&quot; (25.4mm)</td>
<td>• 410</td>
</tr>
<tr>
<td>• S6835LF</td>
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<td>1.5&quot; (38.1mm)</td>
<td>1.5&quot; (25.4mm)</td>
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<tr>
<td>• S6835LT</td>
<td>3.0&quot; (76.2mm)</td>
<td>3.0&quot; (76.2mm)</td>
<td>• 410LT</td>
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<tr>
<td>Model Number / Shackle Height</td>
<td>W401/W417 Exclusive safety keyway</td>
<td>W401/W417 Exclusive safety keyway</td>
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<td>Key Changes</td>
<td>40,000+</td>
<td>40,000+</td>
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<tr>
<td>Key Retaining</td>
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<td>Yes, but optional</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Integration of Company Initiatives

LEAN and 5S

- **LEAN** – Reduce wasted travel time by placing LOTO Stations in each work cell or create machine specific LOTO kits

- **5S + 2S** (Sort, Set in Order, Shine, Standardize, Sustain, +Safety & Security) – Color Code by department or job function.

Food Safety: BRC / SQF / HACCP / FSMA / Metal Detectable

- **Food Safe Materials**: Stainless Steel Lock Shackle, SS Hasps, Metal Detectable Tags

- **No Adhesives or Paints** - Plastic Body Locks with Laser Engraved Info (no labels)

- **FDA Lubricants** – Locks with Food Grade Lubricants: NSF registered for incidental food contact (H1) for use in and around food processing areas.
Sustainable Lock Programs Considerations

- Master Keying the system to avoid bolt cutters (Note: Must follow OSHA procedures the same regardless of how you remove a lock)

- Color Code Locks by Area or Job Function rather than per person. If you have more than 8-9 employees, you will start duplicating lock colors.

- Use Thermoplastic Locks – lower shrinkage rate than a steel or aluminum lock

- Laser Engrave Locks with company name or logo
  - Company labeled locks are less apt to “walk off”

- Add chains to lock hasp and affix next to your energy isolation points.

- Laser Engrave Locks with key number.
  - If key is lost, you can order a new key for 30% of the price of a new lock

- Lock & Cylinder Type – Lock and Cylinder type is critical for program size and scalability

- LOTO Tag and Device Longevity – Physical elements can affect the life of your devices.
  - Will your tags hold up to temps and corrosive chemicals?
  - Does the lock need a protective cover?
Creating LOTO Procedures and Accountability with Software

LOCKOUT/TAGOUT MANAGEMENT

Use Field iD to easily author and edit lockout procedures from a smartphone, tablet or laptop. With Field iD, authorized personnel are instantly working from the latest and most accurate lockout procedures. User login establishes who is performing the work, when the task began, and when it concluded. Field iD provides leading-edge accountability that instructs workers, confirms performance and helps prevent accidents.

- Author, edit and publish lockout procedures
- Ability to create main and sub procedures
- Export and print visual lockout procedures
- Test and verify effectiveness of procedures in real time
- Set up email reminders for required tasks, inspections and audits
- Customize reporting
- Pull real-time data
- Access compliance information on a comprehensive dashboard
- Enhanced reporting

- Assign, perform and record lockout procedure activity
- Schedule and track annual safety audits
INSPECTION AND SAFETY COMPLIANCE MANAGEMENT

Conduct inspections and audits either on the web or on a mobile device – it’s up to you. Field iD allows you to use a laptop, tablet or smartphone to record an inspection. Almost everything is template driven to increase speed, accuracy and consistency.

- Complete equipment inspections
- Conduct safety audits
- Track assets
- Create customized checklists
- Uncover and assign corrective actions
- Set up email reminders for required tasks, inspections and audits
- Customize reporting
- Pull real-time data

HF RFID and Barcode Labels
Best practice lockout solution for pipeline maintenance

- During pipeline maintenance, closed valves upstream could fail or residual material in the line may not be fully drained. These create potential exposure to downstream workers to chemicals, flammable gasses, oil, steam and other risks.

- Use of a blind on a flange pipe is required by OSHA and provides a physical barrier against the unintentional release of energy.

- The new blind flange lockout device provides the best practice solution to improve compliance and control of potential hazards. It ensures the blind will not unintentionally be removed until all work is complete and all personal safety locks are removed.
Confined Space Covers

The Best Practice Solution for Signage and Barrier

- Master Lock Confined Space Covers exceed the OSHA 29CFR 1910.146 Standard for Permit Required Confined Spaces. In addition to clearly identifying the confined space, the lockable covers provide a secure barrier to entry to ensure no employee or temporary worker enters without permission.

- 1910.146(c)(2) – Signage “If the workplace contains permit spaces, the employer shall inform exposed employees, by posting danger signs or by any other equally effective means, of the existence and location of and the danger posed by the permit spaces.”

- 1910.146(c)(3) – Entry barrier “If the employer decides that its employees will not enter permit spaces, the employer shall take effective measures to prevent its employees from entering the permit spaces.”
PROFESSIONAL LOCKOUT SERVICES: Lockout Program Development • Written Lockout Procedures • Compliance Training • Inspections & Audits

Through an on-site consultation, our team will assess your workplace to develop a comprehensive lockout program using the following methodology:

• A review of your existing lockout program
• A facility tour to assess current lockout practices and identify machine or system hazards
• A review and assessment of content for any existing lockout procedures
• An evaluation of your current lockout equipment with functional recommendations
• A review of lockout related inspection records
• Conduct a workshop session to address site specific details for the development of your updated lockout program
• A written summary document that serves as your blueprint for implementing a lockout program within your facility

QUESTIONS/COMMENTS?
THANK YOU!

Justin Kronmiller, QSSP, OSHA 30
Certified Lockout Practitioner
Territory Manager – Security & Safety Solutions
(MN, ND, SD and Western WI)
Master Lock Company LLC
14751 Twin Ponds Curve | Savage, MN 55378
M: 612-242-6896 | CS: 1-800-308-9244 |
Jkronmiller@mlock.com