



What is Lockout Tagout?

Lockout/Tagout (LOTO for short), is one of the most important practices in the industrial environment. LOTO protects the safety of workers from unexpected startups or accidental release of hazardous energy during cleaning, maintenance, or service. Even the smallest movement can cause serious harm. Lockout/Tagout exists to prevent risk entirely and to protect the safety of workers.

Lockout/Tagout exists to keep workers safe by making sure machines are completely shut off, isolated from all energy sources, and unable to start up while someone is servicing or repairing them. It prevents accidental energization, unexpected movement, and serious injuries by requiring each worker to apply their own lock and tag before beginning work.

Why is LOTO Important?

LOTO is important for two main reasons: Safety and legal compliance.

Safety prevents serious injuries and fatalities. Machines and equipment often contain dangerous energy even after being turned off. This energy could accidentally be released if a machine unexpectedly starts during maintenance. This can seriously injure or kill the workers involved.

Examples of hazardous energies:

- Electricity
- Moving parts
- Pressurized fluids
- Gravity (raised machine part that could fall)

Real World examples:

- Worker fixes a conveyor belt and another employee who is unaware turns on the machine. The maintenance worker's arm is caught causing them severe injury.
- Technician repairs a pressurized pipe. Someone opens a valve somewhere else releasing hot fluid and causing burns
- Electrician is working inside a machine. A stored electrical charge is released and results in being shocked.



These incidents are **preventable**. LOTO procedures are designed to ensure all forms of hazardous energy are controlled before anyone works on equipment.

Legal compliance is OSHA and Workplace regulations. In the United States, the Occupational Safety and Health Administration (OSHA) requires employers to have an energy control power lockout system. This includes Lockout/Tagout procedures that go under the 1910.147 OSHA standard. Not following these standards could result in heavy fines and put workers at serious risk. OSHA estimates that proper LOTO procedures prevent 120 fatalities and 50,000 injuries every year

When is LOTO Required and When is it Not?

LOTO must always be used when there is maintenance servicing, cleaning, unjamming, or adjusting machinery in which unexpected energization or start up of machines or equipment, or release of stored energy could cause injury to employees.

This includes:

- Repairing or replacing parts
- Cleaning or unjamming equipment
- Adjusting or lubricating moving parts
- Any work where a body part could enter a dangerous zone

LOTO is NOT required in a few specific cases like:

- When equipment is powered by a plug and is under exclusive control of the person doing the work.
- Checking fluid levels when equipment is powered down and there is no exposure to moving parts.

Always check your company's policies and OSHA guidelines for details.

Who is Involved in LOTO?

Authorized Employees are the people who actually perform the LOTO procedure. They are specifically trained to recognize hazardous energy, how to isolate it, and are responsible



for applying and removing locks and tags. This includes workers such as maintenance workers, electricians, and technicians.

Affected Employees are the people who operate or use the equipment being serviced or who work in the area where LOTO is being performed. They must understand what LOTO is, why it's important, and must also never try to restart or use equipment that is locked or tagged out. This includes workers such as machine operators or line workers.

Other Employees include anyone else who may be in the area. They should be aware of LOTO procedures and know not to interfere with locked/tagged equipment.

What types of energy does LOTO control?

LOTO is used to control all forms of hazardous energy, such as:

- Electrical: power from wires, circuits, batteries, capacitors
- Mechanical: moving parts, belts, gears, springs
- Hydraulic: pressurized liquids in hoses or cylinders
- Pneumatic: compressed air or gases
- Chemical: stored chemicals, reactive substances
- Thermal: hot surfaces, steam, heated fluids
- Gravitational: raised machine parts or loads that could fall

Stored Energy can remain even after a machine is turned off. The energy could be trapped like a compressed spring or a raised load. LOTO procedures include steps to release or restrain this energy before work begins.

The Six basic steps of LOTO:

What should you do? The six steps include – Preparation, Shutdown/Notify, Isolation, Lockout/Tagout, Stored Energy check, and Isolation verification.

Step 1: Preparation

- Identify the equipment
- Find all energy sources (not just obvious ones)
- Review equipment specific LOTO procedure placards.



- Gather the right locks, tags, and tools

EXAMPLE: Before working on a conveyor, a technician should check the machine/equipment specific procedure placard, note it has electrical and pneumatic power, and get the right lockout devices.

Step 2: Shutdown/Notify

- Inform all affected employees that the equipment will be shut down and locked out
- Shut down equipment using machine/equipment specific procedure placard.

Step 3: Isolation

- Physically disconnect or isolate all energy sources following in the order noted on the machine/equipment specific procedure placard.
- May involve turning off circuit breakers, closing valves, disconnecting plugs, or blocking moving parts.

Step 4: Lockout/Tagout

- Attach a lock to each energy isolating device to keep it in “off” or “safe” position
- Attach a tag to each lock that shows who applied it, the date, and reason for lockout

Step 5: Stored Energy Check

- Release, block, or restrain any stored and residual energy
- Releasing off pressure, discharging capacitors, lowering raised parts, or securing moving components

Step 6: Isolation Verification

- Test equipment to ensure it's truly de-energized
- Try to start the machine using normal controls (it should not operate)
- Use test instruments if needed like a voltage tester



Real World Scenario:

A maintenance worker needs to repair a jammed conveyor belt.

How LOTO is applied:

1. **Preparation:** The worker reviews the conveyor LOTO procedure placard, identifies electrical and pneumatic energy sources, and gathers locks and tags.
2. **Shutdown/Notify:** The worker tells the operator and nearby staff, then presses the stop button.
3. **Isolation:** The worker turns off the main breaker and closes the air valve.
4. **Lockout/Tagout:** The worker applies a lock and tag to both the breaker and the valve.
5. **Stored Energy Check:** The worker bleeds air from the system and ensures the belt is not under tension.
6. **Isolation Verification:** The worker tries to start the conveyor from the control panel, and nothing happens.

Result:

The worker safely clears the jam, knowing the machine can't start unexpectedly.



Device Type	What it Does	Example
Padlocks	Locks energy isolating devices in “off” state	Locking a breaker or valve
Lockout Hasp	Allows multiple locks on one device	Group lockout for teamwork
Circuit Breaker Lockouts	Secures circuit breakers in “off” position	Electrical panel lockout
Plug Lockouts	Prevents use of electrical plugs	Portable equipment lockout
Cable Lockouts	Lock multiple devices with a single cable	Complex or hard to reach points
Tags	Warn others not to operate equipment	All lockout points
Group Lock Boxes	Store keys for group lockout situations	Large teams or multiple shifts

Tip: LOTO devices should be standardized, durable, and only used for lockout/tagout.

How to Remove Locks and Restore Equipment Safely



When maintenance servicing is complete it's important to restore equipment to service in a safe orderly way:

1. **Inspect the Area:** Make sure all tools and materials are removed and guards are reinstalled.
2. **Check for People:** Ensure everyone is clear of the equipment.
3. **Notify Affected Employees:** Let everyone know the equipment is about to be restarted.
4. **Remove Locks and Tags:** Only the person who applied each lock should remove it. In group lockout, all personal locks must be removed before the main lock is taken off.
5. **Restore Energy:** Reconnect power, open valves, or re-energize the equipment following the machine/equipment specific procedure placards.
6. **Test Equipment:** Start the machine and check if it operates correctly.

Important Note: If the person who applied a lock is not available, follow your company's written procedure for removing locks safely. Never remove someone else's lock without proper authorization.

Common LOTO Mistakes to Avoid

Even with good intentions, mistakes can happen. Here are some common errors and how to avoid them:

- **Not identifying all energy sources:** Always check for hidden or secondary sources (like stored pressure or backup batteries).
- **Skipping the stored energy check:** Never assume energy is gone just because the main power is off. Always release, block, or discharge stored energy.
- **Failing to verify isolation:** Always try to start the equipment after lockout to confirm it's truly de-energized.
- **Using makeshift devices:** Only use approved locks, tags, and devices. Never use zip ties, tape, or personal padlocks.
- **Poor communication:** Always notify affected employees before and after lockout/tagout.
- **Removing locks too soon:** Only the person who applied the lock should remove it and only after confirming it's safe.



- **Inadequate training:** Make sure everyone understands their role and the procedure. A machine/equipment procedure placard will reduce the risk of overlooking poor communication.

Tip: Machine/Equipment Placards, regular training, written procedure, audits, and checklists help prevent these mistakes.

LOTO Training and Refresher Tips

Training is required for all employees involved in LOTO. Both authorized and affected. Training should cover:

- The purpose and importance of LOTO
- How to recognize hazardous energy sources
- The specific steps of the LOTO procedure
- The proper use of locks, tags, and devices
- What to do if you see a locked/tagged machine

Refresher training:

- Whenever procedures change
- When new equipment is introduced
- If an employee's job changes
- If an audit or incident reveals a gap in knowledge

Best practices:

- Use hands on demonstrations and real equipment for training
- Hold regular toolbox talks and short refresher sessions
- Encourage questions and feedback
- Keep records of all training sessions

Remember: Only trained, authorized employees should perform LOTO procedures. Affected employees must understand the purpose of LOTO and never attempt to restart locked/tagged equipment.



For more information on LOTO checklists, check out our "Basic Lockout/Tagout Checklist". This is located on the resource in the learning center tab of www.lockoutsigns.com

About ECPL: Your Partner in Safer Workplaces

Strong lockout/tagout programs depend on clear communication, reliable identification, and consistent training. ECPL supports organizations by providing durable, compliant machine/equipment specific lockout/tagout procedure placards, tags, and visual safety systems that make procedures easier to follow and harder to overlook. Our products are built to withstand industrial environments and designed to help teams stay aligned, informed, and protected.

If your facility is updating procedures, standardizing equipment labeling, or strengthening safety culture, ECPL offers practical tools and educational resources to support your program. With decades of experience supporting safety professionals, we bring you carefully crafted solutions that will fit your protocols and OSHA standards. We are committed to helping you create a safer, more compliant workplace. One clear message at a time.