

AMERICAN SOCIETY OF
SAFETY PROFESSIONALS
Hawaii Chapter

LOCKOUT TAGOUT

WHAT TO LOOK FOR | WHAT TO FIX | HOW TO PROTECT YOUR WORKFORCE

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The Master Lock Company

Master Lock | AMERICAN LOCK | SentrySafe

OSHA and ANSI

OSHA outlines "The What" and ANSI outlines "The How" for LOTO





- **The What: OSHA LOTO Standard**
  - Title: The Control of Hazardous Energy (Lockout), CFR 29, Part 1910.147 released in 1989
  - 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 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

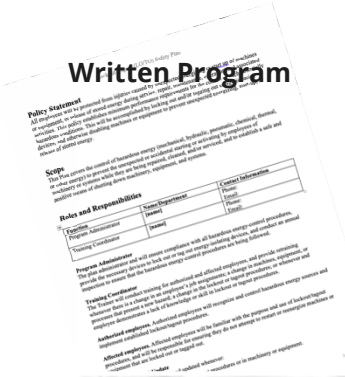
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OSHA FACT SHEET ON LOCKOUT/TAGOUT – IT'S THE LAW!

OSHA 1910.147

1. Develop, implement, and enforce an energy control program
2. Develop, document, implement, and enforce energy control procedures
3. Provide effective training as mandated for all employees covered by the standard
4. Inspect energy control procedures at least annually
5. Use only lockout/tagout devices authorized for the equipment or machinery and ensure that they are durable, standardized, and substantial

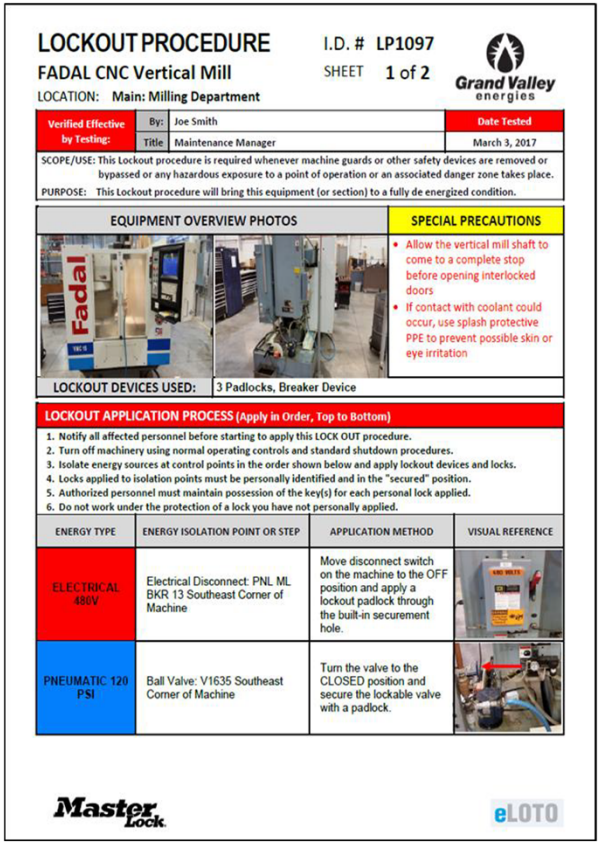
Written Program



Annual Audits



Written Lockout Procedure





Lockout



Devices



OSHA TOP 10 CITED STANDARDS 2025

#4: CONTROL OF HAZARDOUS ENERGY (LOCKOUT)

2,177 Violations

1 FALL PROTECTION 1926.501	2 HAZARD COMMUNICATION 1910.1200	3 LADDERS 1926.1053	**4 LOCKOUT 1910.147**	5 RESPIRATORY PROTECTION 1910.134
6 FALL PROTECTION 1926.503	7 SCAFFOLDING 1926.451	8 POWERED INDUSTRIAL TRUCKS 1910.178	9 PPE 1926.102	10 MACHINE GUARDING 1910.212

TOP 1910.147 VIOLATIONS

#1 1910.147(c)(4) – Energy Control Procedures

#2 1910.147(c)(7) – Training and Communication

#3 1910.147(c)(6) – Periodic Inspection

#4 1910.147(c)(1) – Energy control program

What to Look For

Effective – fully locks out energy sources

Easy-to-use – intuitive design

Universal fit – fits multiple lockout applications

Durable – withstands harsh environments

Chemicals, sunlight, water, etc…

Identifiable – includes appropriate trilingual “Danger” and work identification labels

Supports full program – pulls together a greater lockout/tagout program

Safety Padlocks

Designed to:

- **Lock & complement lockout devices**



Look for:

- **One key offered per padlock**
- **Key recording services to prevent duplication**
- **Reserved keys offered to prevent duplication**
- **Thousands of key changes per padlock**



Circuit Breaker Lockouts

Designed to:

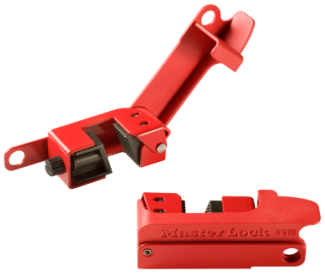
- Lock out various circuit breaker styles





Look for:

- Lockouts that universally fit multiple breaker styles
- Have strong gripping strength
- Constructed of durable metals and plastics





Electrical Plug Lockouts

Designed to:

- Cover various size/voltage electrical plugs



Look for:

- Durable plastic to withstand high temps, chemicals
- Offers reusable, trilingual “Danger” and worker I.D. labels
- Design rotates into itself to save space







Gate Valve Lockouts

Designed to:

- Cover variety of gate valve sizes



Look for:

- Durable plastic to withstand high temps, chemicals
- Offers reusable, trilingual “Danger” and worker I.D. labels
- Design rotates into itself to save space



Ball Valve Lockouts

Designed to:

- Lock out multiple ball valve sizes



Look for:

- Durable metal construction to withstand high temperatures
- For odd handles, requires handle removal and locks out valve stem
- Compact for easy application & storage



Cable Lockouts

Designed to:

- **Apply to multiple lockout applications (e.g. gate valves)**



Look for:

- **Cinches tight after locked to ensure proper fit**
- **Offers customized cable lengths**
- **Durable metal cable with plastic coating to prevent scratching**



Group Lock Boxes

Designed to:

- **Lock keys for group lockout**



Look for:

- **Designs that will not allow access to keys when locked**
- **Durable metal construction with corrosion-resistant finish**
- **Can be hand-carried or wall mounted for easy access**





Lockout Kits

Designed to:

- Offer specific lockout products per worker



Look for:

- Durable, high quality kits
- Customizable product assortment options
- Products shipped within kit
- Convenient storage organizers





Lockout Wall Stations

Designed to:

- Organize and store padlocks and lockouts in one area





Look for:

- Durable construction
- Lockable cover
- Offered with multiple padlock options
- Available with multilingual labels





Procedural Signs & Isolation Tags

Procedural sign placed on each machine

- Lockout procedures are clear
- Pictures of machinery call out key lockout points
- Procedures outline lockout devices needed



LOCKOUT PROCEDURE
I.D. # LP1097
FADAL CNC Vertical Mill
SHEET 1 of 2
LOCATION: Main: Milling Department
Grand Valley energies

Verified Effective by Testing:	By:	Joe Smith	Date Tested
	Title	Maintenance Manager	March 3, 2017

SCOPE/USE: This Lockout procedure is required whenever machine guards or other safety devices are removed or bypassed or any hazardous exposure to a point of operation or an associated danger zone takes place.
PURPOSE: This Lockout procedure will bring this equipment (or section) to a fully de energized condition.

EQUIPMENT OVERVIEW PHOTOS

SPECIAL PRECAUTIONS
- Allow the vertical mill shaft to come to a complete stop before opening interlocked doors
- If contact with coolant could occur, use splash protective PPE to prevent possible skin or eye irritation

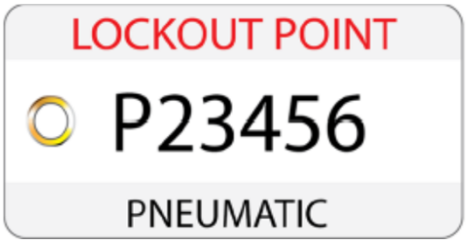
LOCKOUT DEVICES USED: 3 Padlocks, Breaker Device

LOCKOUT APPLICATION PROCESS (Apply in Order, Top to Bottom)
1. Notify all affected personnel before starting to apply this LOCK OUT procedure.
2. Turn off machinery using normal operating controls and standard shutdown procedures.
3. Isolate energy sources at control points in the order shown below and apply lockout devices and locks.
4. Locks applied to isolation points must be personally identified and in the "secured" position.
5. Authorized personnel must maintain possession of the key(s) for each personal lock applied.
6. Do not work under the protection of a lock you have not personally applied.

ENERGY TYPE	ENERGY ISOLATION POINT OR STEP	APPLICATION METHOD	VISUAL REFERENCE
ELECTRICAL 480V	Electrical Disconnect: PNL ML BKR 13 Southeast Corner of Machine	Move disconnect switch on the machine to the OFF position and apply a lockout padlock through the built-in securement hole.	
PNEUMATIC 120 PSI	Ball Valve: V1635 Southeast Corner of Machine	Turn the valve to the CLOSED position and secure the lockable valve with a padlock.	

Master Lock
eLOTO

Isolation point tags mark key lockout points







What are the Main Causes of Serious Machinery Accidents?





- Accidental Restarting of Equipment During Servicing or Repairs
- Failure to Stop Equipment
- Failure to Disconnect From Power Sources
  - Failure to Dissipate Residual Energy
- Failure to Clear Work Areas Before Reactivation
  - People, tools and work materials
- Insufficient Guarding of Dangerous Machinery
  - Nonexistent (or Removed) Machine Guarding
  - Poorly Designed/Installed Machine Guarding
  - Defeat of Presence Sensing Safety Devices
    - Interlocks, light curtains, etc.

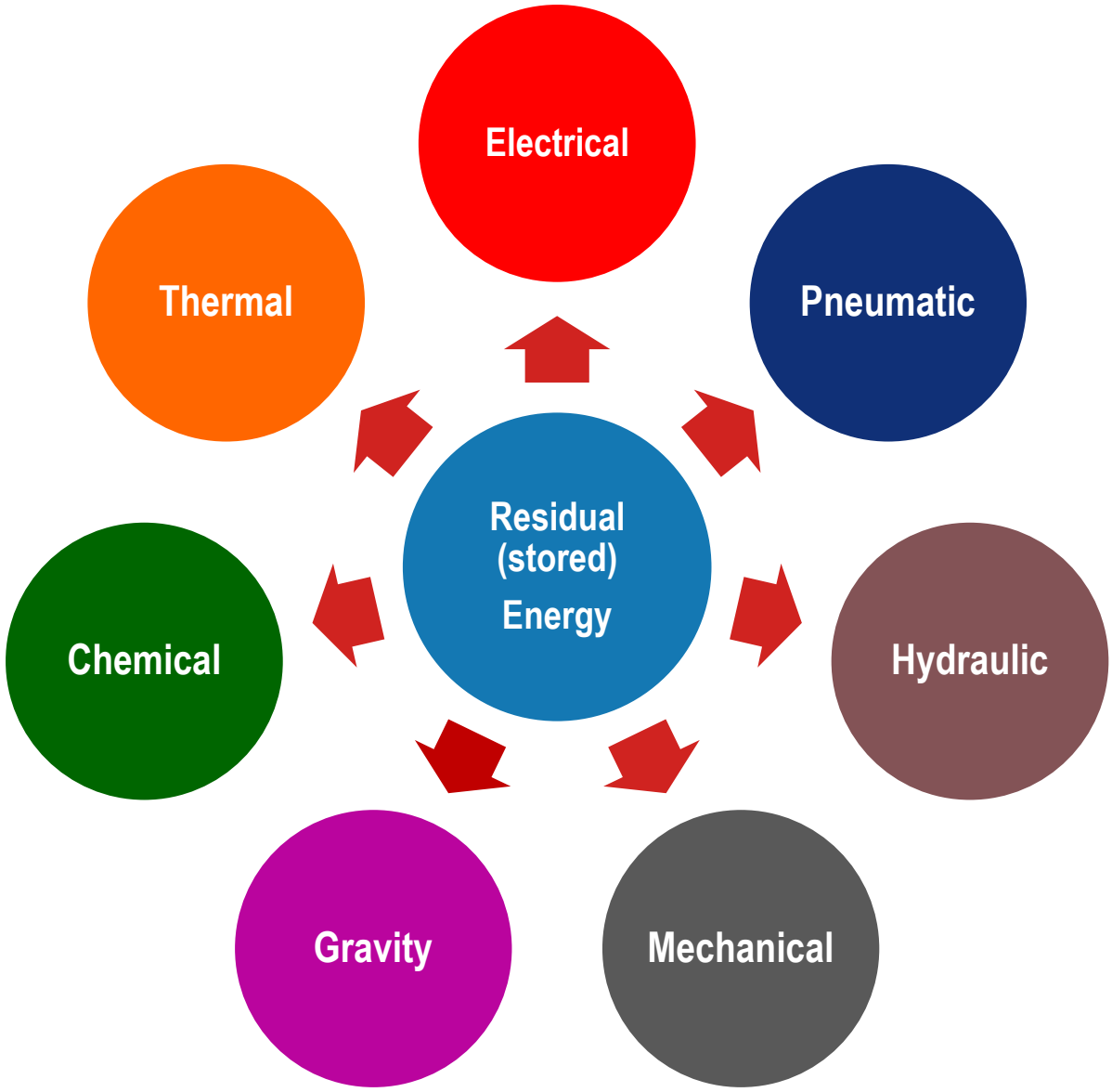
Let's look at a Fatal Accident Scenario



- What major accident causes were involved in this scenario?

ENERGY IS FOUND IN MANY DIFFERENT SOURCES –

Each type has the potential for leftover (Residual) or stored hidden energy that remains a hazard for workers until released



Consequences of not controlling the equipment being worked on

WARNING: The following slides are extremely graphic

- They are intended to depict the multiple ways machine injuries can occur and the level of consequences that are commonly suffered in significant accidents.
- They are intended not to shock the viewer, but to put into context the nearly instantaneous result of sudden startup of machinery or the release of various forms of energy.
- These pictures do not reflect the multiple surgeries and treatments necessary to recover from such injuries as best as medically possible.
- These slides show extreme outcomes. The question to ask yourself is if you would be willing to suffer even a significantly lesser form of these injuries just because it took to much time to properly isolate machinery or systems and apply protective locks and controlling devices.

What are the results of not protecting yourself?





Lacerations and Amputations

What are the results of not protecting yourself?



Crushing Injuries

What are the results of not protecting yourself?



Electrical Burns





What are the results of not protecting yourself?



Chemical Burn



Steam Burn

What are the results of not protecting yourself?

High pressure injuries



Pneumatic injection

Hydraulic injection



What are the results of not protecting yourself?



Crushing,

Avulsions

And other

Mutilating Injuries

Let's Review:

Key Ideas to Locking out for Personal Safety

1. **Authorized –** Those who apply Lockout must be authorized to do so by their employer (trained about Lockout and familiar with the equipment).
2. **Use The Machine Specific Procedures –** Missing one of the energy sources or isolating the wrong one is a dangerous mistake to make.
3. **Verify Your Lockout–** Always Test, Try, Verify…
4. **Communicate –**with your co workers so that everyone involved is aware of the lockout methods being used.
5. **One Lock / One Person / Per Source –** Protect your self at every point – Never work under the false security of another person's lock.
6. **Alternative Methods –** Only when fully approved as routine, repetitive, and integral to the use of the equipment for production. A Risk Assessment should be done to identify all required control measures..
7. **Shift or Personnel Changes –** Hand off lockout face to face according to the shift change plan.
8. **Proper Devices –** Only use Lockout devices approved for your workplace.
9. **Identify yourself** - Be sure your lockout equipment says who it is protecting
10. **Watch out for each other –** Speak up if you see a co-worker not performing Lockout or not testing equipment before beginning work.



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QUESTIONS?

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