

Lockout/Tagout Reference Guide (OSHA)

What types of energy should be controlled by workers before they repair or service machinery and/or equipment?

- Kinetic or mechanical energy in the moving parts of machinery and/or mechanical systems.
- Potential energy stored in pressure vessels, gas tanks, hydraulic or pneumatic systems, and springs. In the case of springs, potential energy is released as hazardous kinetic energy.
- Electrical energy from generated electrical power, static sources or electrical storage devices such as batteries or capacitors.
- Thermal energy resulting from mechanical work, radiation, chemical reaction or electrical resistance. Thermal energy may be present in either high or low temperature forms.

What steps should be followed to protect workers who install or service machinery and/or equipment?

- Comply with all OSHA regulations.
- Identify and label all sources of hazardous energy.
- Before beginning work, do the following:
 - ✓ Notify all affected employees of the application and removal of lockout/tagout devices before the controls are applied and after they are removed from the machine or piece of equipment.
 - ✓ De-energize all sources of hazardous energy:
 - Disconnect or shut down engines or motors.
 - De-energize electrical circuits.
 - Block gas or liquid flow in hydraulic or pneumatic systems by de-energizing hydraulic or pneumatic pump systems, inserting blanks into piping circuits and locking the control valves in a closed position.
 - Block machine parts against motion.
 - ✓ Block or dissipate stored energy:
 - Discharge capacitors.
 - Release or block springs that are under compression or tension.
 - Block or restrain equipment or components of equipment that are in a raised or suspended position, such as loader buckets, forklift carriages, etc.
 - Block or restrain components of equipment that are in an open position, such as hopper or bin discharge gates.
 - Chock the wheels of mobile equipment.
 - Vent or bleed down fluids from pressure vessels, tanks, accumulators and/or piping systems.
 - Never vent toxic, flammable or explosive substances directly into the atmosphere.
 - ✓ Lockout and tagout all forms of hazardous energy including electrical breaker panels, control valves, etc.
 - ✓ Use only assigned locks and tags. Retain personal possession of the key to your assigned lock.
 - ✓ Verify by test and/or observation that all energy sources are de-energized, returning all controls to the neutral or off position after testing.
 - ✓ Inspect repair work before removing your lock and activating the equipment.
 - ✓ Make sure that only you remove your assigned lock.
 - ✓ Make sure that you and your co-workers are clear of danger points before re-energizing the system.

What guidelines apply to locks and tags used in the lockout/tagout procedure?

- Combination, master-keyed and match-keyed locks are prohibited for use in the lockout/tagout procedure.
- Only one key shall be allowed for any lock used in the lockout/tagout procedure.
- Tags used in the lockout/tagout procedure shall state “Do Not Operate” and shall identify the owner of the tag and associated lock.

What procedure must be followed in the event that a person fails to remove his/her lock and tag and are then unavailable?

- Upon determining that all persons are removed from the affected area of the machinery or piece of equipment and that the maintenance/repair work has been completed, the **plant manager** can remove the lock and tag.
- If the plant manager is not present or available at the site, the supervisor that is in charge shall contact the plant manager and obtain verbal approval to remove the lock.
 - ✓ Upon receipt of verbal approval, the lock and tag shall only be removed after determining that all persons are removed from the affected area of the machinery or piece of equipment and that all maintenance/repair work has been completed.