

# Fact Sheet

## Lockout/Tagout

Each year, hundreds of employees are killed and thousands more are seriously injured when machines start up, become energized, or release stored energy while the employee is performing service and maintenance such as repair, lubrication, set-up, clearing jams, etc. This type of work is almost always covered by OSHA's "Lockout/Tagout" regulation.

### Introduction

OSHA's "Lockout/Tagout" regulation (more formally known as the "Control of hazardous energy") is a Federal regulation (29 CFR 1910.147).

It is intended to prevent injuries to employees who perform service or maintenance on equipment during which accidental or inadvertent start-up, energization, or release of stored energy could cause injury.

### "Energy"

The regulation is intended to ensure that all forms of hazardous energy are positively controlled and the equipment is brought to a "Zero Mechanical State" prior to beginning service or maintenance.

The lockout/tagout rule is NOT an electrical safety regulation. All forms of hazardous energy are addressed by the standard. This includes:

- Electricity
- Hydraulic energy
- Heat
- Pneumatic energy

- Kinetic energy such as rotating or moving parts
- Gravity
- Chemical energy

### Who is covered by the regulation?

The regulation applies to all general industry employers whose employees perform servicing and maintenance of machines and equipment in which "unexpected energization or start-up of the machines or equipment or release of stored energy could cause injury to employees."

Examples of this type of work include, but are not limited to:

- Electrical work such as changing fuses, or installing, replacing, or repairing electrical equipment/devices
- Clearing jammed materials from clogged equipment
- Performing minor maintenance activities such as setting up, inspecting, maintaining, or changing tooling on equipment such as wood working equipment, etc.

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- Performing major maintenance activities such as installing, repairing, removing, or modifying equipment

## Important exceptions

Without question, the lockout/tagout regulation is one of the most difficult OSHA regulations with which to comply. A great deal of procedure development may be required. Therefore, it is important to understand some of the key exceptions in the rule, to prevent unnecessary work.

- The regulation does not apply when a machine or equipment is in its “normal production mode”—for example, when the “widget machine” is making widgets. At these times, other OSHA regulations, such as machine guarding rules, may apply. Minor servicing activities (for example changing tooling) which occur during the production cycle are covered by the lockout/tagout rule if the employee is required to open, remove, or otherwise defeat a machine guard or safety device, or if the employee must place any part of his/her body where an associated danger exists.
- The regulation also does not apply to cord and plug connected electric equipment for which exposure to all of the hazards of unexpected energization or start up of the equipment is controlled by unplugging the equipment and by the plug being under the exclusive control of the employee performing the work.

For reasons that will be clarified later, it’s important to note that the exceptions above apply to the regulation as a whole, and not just to one specific component of the regulation.

## Requirements of the program

Employers who are covered by the regulation are required to develop a formal lockout/tagout program consisting of:

- Formal, written energy control procedures
- Employee training
- Periodic inspections of procedures

## Energy control procedures

Certain types of machines or equipment will require a formal, written energy control procedure.

The criteria for identifying machines which require written procedures are complicated but can be summarized as follows: any machine or equipment that has multiple energy sources will require a written procedure. Remember, energy sources include heat, kinetic energy, etc. For example, a table saw would require a procedure if employees change saw blades, because two energy sources are involved in that specific type of work (electricity and rotation of the blade after the machine is turned off). A portable heater would also require a procedure (electricity and residual heat after the unit is turned off).

Machines which have only one form of energy and meet all other criteria under the “readily

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identifiable” exception found at 29 CFR 1910.147 (c)(4)(i) are exempt from the requirements to develop written procedures, but are not exempt from other requirements under the regulation.

The required content of the procedure is also complicated, and rather than summarize it here, it is recommended that locations utilize the sample procedure found in appendix A of the regulation. A slightly modified version of this form is illustrated at the end of this fact sheet and can also be acquired from <http://www.ohs.umn.edu/>. The red font in the sample at the end of this fact sheet denotes where customizations have been made to the template.

## Training

All employees involved in the program must receive training at their time of initial assignment. This includes “authorized” as well as “affected” and “other” employees.

Authorized employees are employees who are trained and authorized to place locks and tags on equipment for the purpose of performing service and maintenance. Affected and other employees are employees who are not “authorized” but may encounter the locks and tags of authorized employees in the workplace. Obviously, authorized employees require much more detailed training. Affected and other employees simply need to be instructed on the purpose of the program and the prohibition against removing, ignoring, or tampering with these safety devices. Training for affected and other employees is normally very brief

and can easily be combined with other training topics such as electrical safety.

The regulation does not specifically require annual retraining for employees. However, portions of the rule on periodic inspections clearly state that the review process must include a review of the authorized employees’ responsibilities. This can be interpreted as a retraining requirement.

## Periodic inspections

Once developed, all written procedures must be inspected at least annually.

The purpose of this inspection is to identify errors in the content of procedure itself, and to verify employees’ understanding of and compliance with it.

The inspection must be in the form of one authorized employee observing another authorized employee as he/she executes a lockout/tagout procedure. As a time-saving means, this observation need not be “staged.” In other words, it is acceptable (even preferable) for this inspection to occur within the scope of the normal day-to-day work activities of the employees.

All inspections must be documented. A form used for this purpose can be found on the OHS website (<http://www.ohs.umn.edu/>).

## Other requirements of the regulation

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Again, the lockout/Tagout rule is quite complicated and there are many other requirements included in the regulation. These include:

- Requirements for Lockout/Tagout devices
- Rules for special circumstances, such as contractors, gang lockout, etc.
- Rules for machines which can not be locked out, etc.
- Procedures and rules which apply to work during which lockout/tagout is impossible.

## Questions

If you have questions on this topic, please contact the Office of Occupational Health and Safety at (612) 626-5008 or [uohs@umn.edu](mailto:uohs@umn.edu), or see the website at <http://www.ohs.umn.edu>.

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## WRITTEN LOCKOUT/TAGOUT PROCEDURE

Lockout Procedure for Craftsman Table Saw in Maintenance shop  
Identification of equipment

**Purpose.** This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It shall be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

**Compliance with this instruction.** All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance shall not attempt to start, energize, or use that machine or equipment.

### Sequence of Lockout

Step #	General Description	Specific instruction
1	Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.	Name(s)/Job Title(s) of affected employees and how to notify.  <b>Verbally notify all other employees in shop area.</b>
2	The authorized employee shall review the types and magnitudes of the energy that the machine or equipment utilizes, shall understand the hazards of the energy, and shall know the methods to control the energy.	Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.  <ul style="list-style-type: none"> <li>• <b>Electricity – 110 V. May cause parts to move, start or cycle. May cause electric shock, electrocution.</b></li> <li>• <b>Rotating blade- Blade will continue to rotate for several seconds after shut down. May cause lacerations or amputations.</b></li> </ul>
3	If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).	Type(s) and location(s) of machine or equipment operating controls.  <b>Push red STOP button on front of machine</b>



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4	De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).	<p>Type(s) and location(s) of energy isolating devices.</p> <p><b>Unplug machine from electrical power source. Make sure hands, feet, and floor are dry.</b></p>	<p><b>Photo (optional)</b></p> 
5	Lock out the energy isolating device(s) with assigned individual lock(s).	<p>Place male end of electrical cord in plug lockout device and lock in closed position with approved lock and tag.</p>	
6	Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.	<p>Type(s) of stored energy - methods to dissipate or restrain.</p> <p><b>Blade rotation-Allow blade to come to a complete stop</b></p>	
7	<p>Ensure that 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 operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.</p> <p><b>Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.</b></p>	<p>Method of verifying the isolation of the equipment.</p> <p><b>Visually verify that blade has come to a complete stop.</b></p> <p><b>Visually verify the machine is unplugged</b></p> <p><b>Attempt to start machine by pushing "Start" button on front of machine.</b></p>	

The machine or equipment is now locked out.

### Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps shall be taken.

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1. Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.
2. Check the work area to ensure that all employees have been safely positioned or removed from the area.
3. Verify that the controls are in neutral.
4. Remove the lockout devices and reenergize the machine or equipment. Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.
5. Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for used.