

GSTIN No.: 06AAVPW8746Q1Z6,
PAN No.: AAVPW8746Q
TIN No.: 06821328889,
TAN no.: RTKKO3359G
IEC: 0509006116

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to meet
OSHA'S Lockout Tagout Standard
29 CFR, 1910.147&1910.269



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GSTIN No.: 06AAECK2831L1Z1
PAN No.: AAECK2831L
TIN No.: 06824000112
CIN No.: U31903HR2011PTC042508
IEC: AAECK2831L

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Lockout and Tag out

Most industrial accidents are caused by the unexpected Energization or start up of machines / equipment or by the uncontrolled release of energy. Whereas, these accidents can be prevented by proper LOCKOUT / TAG OUT procedures.

OSHA's LOCKOUT / TAG OUT standard, 29 CFR 1910.147 & 1910.269 are designed to prevent needless deaths and serious injuries to service & maintenance personnel by controlling unauthorized or accidental use of energy.

To perform service and maintenance work on industrial equipment safely, you must understand the importance of energy control and OSHA's LOCKOUT / TAG OUT standards

WHAT IS LOCKOUT / TAG OUT?

A lockout is a method of preventing mishaps by keeping equipment from being accidentally started or switched off.

Lockouts are used for - disconnecting switches , circuit breakers , valves or other energy isolation mechanisms & to put them in the safe / off position.

A lock is attached, so that the equipment can't be energized.

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In a Tag out, the energy-isolating device is placed in the safe position and a written warning is attached to it.

Mostly, Lockout and Tag out materials are supplied by the Employers to make their employees Answer able & responsible for all their acts / decision taken during the production , maintenance , servicing , installation , disassembling of machines, etc. These are the areas where maximum accidents take place in a unit. We at KRM provide the world class LOCKOUT / TAGOUT products to our customers throughout the world at most affordable prices.

We are always open to the ideas and suggestions of our dedicated customers for improving the existing range and innovating new LOTO products as per their requirements.

Most industrial accidents are caused by the unexpected energization or start up of machines or equipment or by the uncontrolled release of energy. Many of these accidents can be prevented by proper **LOCKOUT / TAGOUT** procedures. **OSHA's LOCKOUT / TAGOUT standard, 29 CFR & 1910.147 & 1910.269** are designed to prevent needless deaths and serious injuries to service and maintenance personnel by controlling unauthorized or accidental use of energy.

To perform service and maintenance work on industrial equipment safely, you must understand the importance of energy control and **OSHA's LOCKOUT / TAGOUT** standard. You must also know how to apply energy isolation and **LOCKOUT / TAGOUT**



- is a method of keeping equipment from being set in motion and endangering workers.
- A disconnect switch, circuit breaker, valve or other energy isolation mechanism is put in the safe or off position.
- A device is often placed over the energy-isolating mechanism to hold it in the safe position.
- This is where **LOCKOUT / TAGOUT** products are essential
- A lock is attached so that the equipment can't be energized. In a **TAGOUT**, the energy-isolating device is placed in the safe position and a written warning is attached to it. All lockout and tagout materials are supplied by the employer.

LOCKOUT / TAGOUT Require - Where?

Repairing electrical circuits. Cleaning or oiling machinery with moving parts. Clearing jammed mechanisms. **OSHA** lets each employer use **LOCKOUT / TAG OUT** or both. It's your responsibility to follow whichever system has been chosen for your workplace. Locks and Tags by themselves do not de-energize equipment. Attach them only after the machinery has been isolated from its energy sources.

LOCKOUT / TAGOUT Applied – Where?

Energy isolation and **LOCKOUT / TAGOUT** are to be applied only by trained employees authorized to perform service or maintenance

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- Before **LOCKOUT / TAGOUT** is applied, all employees who work in the affected area must be notified.
- OSHA requires that control of hazardous energy be done according to a six-step procedure

Grounding for Shutdown

Before you turn off any equipment in order to lock or tag it out, you must know:

- The types and amounts of energy that power it.
- The hazards of that energy.
- How the energy can be controlled

Equipment Shutdown

- Shut the system down by using its operating controls.
- Follow whatever procedure is applicable for the equipment, so that you don't endanger anyone during shutdown

Equipment Isolation

- Install all energy-isolating devices so that the equipment is isolated from its energy sources.
- Be sure to isolate all energy sources and secondary power supplies as well as the main one.
- Never pull an electrical switch while it is under load.
- Never remove a fuse instead of disconnecting the energy or power



LOCKOUT/TAGOUT

What are the Application of Lockout / Tag out

All energy-isolating devices are to be locked, tagged or both according to your company **LOCKOUT/TAG OUT** procedures.

Only the standardized devices supplied by your employer are to be used for **LOCKOUT / TAG OUT**, and they are not to be used for anything else.

Use a **LOCKOUT** device if your lock cannot be placed directly on the energy control.

- When **LOCKOUT** is used, every employee can lock out a single energy-isolating device by using a multiple-lock hasp.
- For big jobs, a **LOCKOUT** box can be used to maintain control over a large number of padlocks and keys.
- If tags are used instead of locks, attach them at the same point as you would a lock, or as close to it as possible.
- Fill tags out completely and correctly

HOW TO CONTROLLED FOR STORED ENERGY

Take any of the following steps that are necessary to guard against energy left in the equipment after it has been isolated from its energy sources.

Inspect the system to make sure all parts have stopped moving.



Install ground wires. Relieve trapped pressure. Release the tension on springs, or block the movement of spring-driven parts. Block or brace parts that could fall because of gravity. Block parts in hydraulic and pneumatic systems that could move from the loss of pressure. Bleed the lines and leave vent valves open.

Drain process piping systems and close valves to prevent the flow of hazardous materials.

- If a line must be blocked where there is no valve, use a blank flange.
- Purge reactor tanks and process lines.
- Dissipate extreme cold or heat, or wear protective clothing.
- If stored energy can reaccumulate, monitor it to make sure it stays below hazardous levels.

Equipment – Isolation Verification

Take any of the following steps that fit your company's equipment and energy control program. Make sure all danger areas are clear of personnel.

Verify that the main disconnect switch or circuit breaker can't be moved to the "on" position.

Use a voltmeter or other equipment to check the switch.

Press all start buttons and other activating controls on the equipment itself to ensure that it is isolated.

Shut off all machine controls when the testing is finished

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LOCKOUT/TAGOUT

Performing the Work

Look ahead, and avoid doing anything that could re-activate the equipment Don't bypass the lockout when putting in new piping or wiring

SAFETY GUIDELINES

Lockout/Tagout is a very important part of "life at work" in industries, manufacturing & processing plants, office buildings, healthcare facilities, hotels, ships, offshore installations, etc.

Lockout / Tagout ?

"LOCKOUT" means to physically neutralize all energies in a piece of equipment before beginning any maintenance or repair work. Lockouts generally involve: Stopping all energy flows (for example, by turning off switches, or valves on supply lines); Locking switches and valves; Securing the machine, device, or power transmission line in a de-energized state (forexample, by applying blocks or blanks, or bleeding hydraulic or pneumatic pressure from lines). **"TAGOUT"** means placing a warning tag or sign (a tagout device) on an energy isolating device warning not to operate the machinery until the tagout device is removed. It alerts other employees as to the status of a machine or system, about why it has been taken out of service, and the identity of the individual who has applied the lockout.

What is Lockout / Tag out necessity



If a Lockout is not performed, uncontrolled energies could cause:

- Electrocutation (contact with live circuits);
- Cuts, bruises, crushing, amputations, death, resulting from:
- Entanglement with belts, chains, conveyors, rollers, shafts, impellers;
- Entrapment by bulk materials from bins, silos or hoppers;
- Drowning in liquids in vats or tanks;
- Burns (contact with hot parts, materials, or equipment such as furnaces);
- Fires and explosions;
- Chemical exposures (gases or liquids released from pipelines).

Often power sources are inadvertently turned on, or valves opened mistakenly before the work is completed, resulting in serious injuries and fatalities. Therefore, it is important not only to ensure that all energies are properly locked out, but also that they remain locked out until the work is completed.

How the Lockout to be done?

For lockouts to be effective, a clear, well-defined lockout policy supported by administrative and control procedures, and proper training, is essential. A systematic approach would be to:

- Develop a lockout policy;
- Identify lockout situations



- Develop procedures;
- Train workers; and
- Enforce and update your policy

Develop a perfect Lockout Policy

Your written Lockout policy should make reference to your company's general occupational health and safety policy. It should clearly outline responsibilities, and refer to procedures to be followed. It should state your company's intent to protect all employees by:

- **Identifying all activities and machines**, equipment, and processes which require Lockouts (for example, repairs, maintenance, and cleaning of pipelines, tanks, and machines);
- Making the appropriate **persons responsible** for Lockouts;
- Ensuring that Lockouts are performed by **authorized persons** only;
- **Developing procedures** for each specific Lockout situation;
- **Training** those who will perform Lockouts;
- **Verifying the effectiveness** of such training;
- **Reviewing, updating, and enforcing the lockout policy.**

How to Identify the Lockout Situation?

Assess all processes, machinery, energies, and work activities to identify where and when Lockouts are needed.



Maintenance work will probably be the major focus of Lockout needs.

A useful source of information may be workplace inspections, and recommendations from your joint health and safety committee or health and safety representative.

List every machine, device, or process that will require a Lockout. Against each, list the energy forms involved.

Different energy forms will require different procedures. More than one lockout may be required for a single machine or system

Develop LOTO Procedures

Procedures should be in writing and communicated to all employees and departments.

Administrative procedures for lockouts in general should include the following:

- Supervisors to be notified of lockouts in their areas;
- All lockouts to be authorized by a work permit;
- Lockout to stay in effect if work is not completed at the end of the shift;
- Completed work to be reported to the person in charge for signing off the work permit.

Control procedures involve developing separate, detailed, written lockout procedures for each identified machine, device or process that may require to be locked out at some time.

The procedure should identify:



The **person responsible for performing the lockout** (for example, operator, millwright, electrician);

The **person responsible for ensuring that the lockout is properly performed** (for example, maintenance supervisor and/or site supervisor);

The **energy sources to be controlled by the lockout**;

The **location of control panels, power sources** (including electrical power boxes), switches, interlocks, valves, blocking points, relief valves and/or blanking and bleeding points (review schematics);

Special hazards (for example, a flywheel that spins for minutes after power is removed, electrical capacitors);

- The **personal protective equipment** that must be used or worn (for example, eye protection, electrically insulated foot protection);
- **The step by step Lockout procedure** (that is, who does what, and when);
- The **testing procedure** to ensure that all energy sources are controlled;
- The **step by step procedure for removing the lockout**
- Here is a list of energy forms and their sources. The brief general lockout guideline for each energy form will form the basis for your detailed control procedures.

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Energy Form | Energy Source | General Lockout Guideline

Electricity

Power transmission lines, Machine powercords; Motors;Solenoids; Capacitors (stored Electrical energy)

Turn off power at machine first (i.e., at point of operation switch), and then at the main disconnect switch for the machine; lock and tag main disconnect switch (or remove fuses From box, and then lock and tag box).

Fluid pressure

Hydraulic systems (e.g., Hydraulic Presses Rams , Cylinders , Hammers)

Shut off, lock (with chains, Built-in lockout devices, or Lockout attachments) and Tag valves; bleed of and blank lines as necessary

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Air Pressure

Pneumatic systems (e.g., Lines pressure reservoirs , Accumulators , Air surge , Tanks , Rams , Cylinders

Shut off, lock (with chains, built-in Lockout devices, or Lockout attachments) and Tag valves, Bleed off excess air; if pressure cannot be relieved, Block any possible movement of machinery.

Kinetic Energy

Blades , Flywheels , (Energy of the materials in supply moving object lines of bins or silos or materials moving object may be powered)

Stop and Block machine parts (e.g., stop flywheels and ensure that they do not recycle), Review entire cycle of mechanical motion, Ensure that all motions are stopped. Block material from moving into area of work.



LOCKOUT/TAGOUT

Potential energy Springs (e.g., in air (stored energy brake cylinders); that an object has Actuators; counter weights; the potential Raised loads; top to release due or movable part of to its position) a press or lifting device

If possible, lower all suspended parts and loads to the lowers (rest) position, block parts that might be moved by gravity; release or block spring energy.

Pressurized Liquids and gases Supply lines , storage tanks and Vessels (Including steam , chemicals)

Shut off, lock (with chains, built-in lockout devices, or lockout attachments) and tag valves; bleed off excess liquids or gases; blank lines, as necessary.

Issue sturdy, key-operated padlocks to workers who service or maintain equipment. An identification tag must be securely attached to the lock. Each worker should be issued with only one key. It is important that, for their personal protection, each worker and/or foreperson working in or on a machine places his/her own safety lock on the disconnect switch. **Use tags**



to spotlight work in progress and give details of work being done (see Figure 2). Only when the work is completed and the work permit signed off, may each worker remove his/her lock. The last lock to be removed should be that of the person supervising the lockout. This lock should be removed only by the person in charge, and this responsibility should not be delegated

How to Train Your workers?

- All workers performing Lockouts and their supervisors must receive training. The training should address:
- importance of Lockouts;
- Legal requirements for lockouts;
- Company policy on lockouts;
- The energy forms, hazards and procedures (administrative and work-related) that must be followed;
- The importance of following procedures;
- Lockout errors to be avoided (for example, assuming the equipment is inoperable or that the job is too small to warrant a lockout);
- The use and care of personal protective equipment;
- Proper use of all tools.

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Test employees by having them perform mock Lockouts. Provide refresher trainer at least quarterly

How to Enforce and update your Lockout Policy?

Identify persons, responsible for ensuring, that lockouts are properly followed and hold them accountable. The best way to do this is to include this in their job descriptions.

Review Lockout procedures periodically (semiannually) and revise them in light of any problems that may have been identified. When you change a process or equipment, Lockout requirements may also change. Review and revise your Lockout procedures whenever changes are made.

COORDINATION AND WORKING TOGETHER ARE THE KEYS OF A SUCCESSFUL LOCKOUT / TAGOUT PROGRAMME.

We can provide you with all the material that you may require regarding Lockout/Tag out like LOTO products,

Details of Lockout/Tag out programs & procedures,

C D presentation,

Various necessary forms required in process of lockout/tag out,

Small booklets for your supervisors and Health and Safety Manager,

Shop floor workers / employees etc.