

Lockout – Tag Out Procedure

How-To Guide

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PURPOSE

This document outlines when a new lockout procedure is required, who is authorized to write, verify, and authorize this procedure, and how to draft such a procedure with the aid of the Lockout/ Tag-out (LOTO) procedure template.

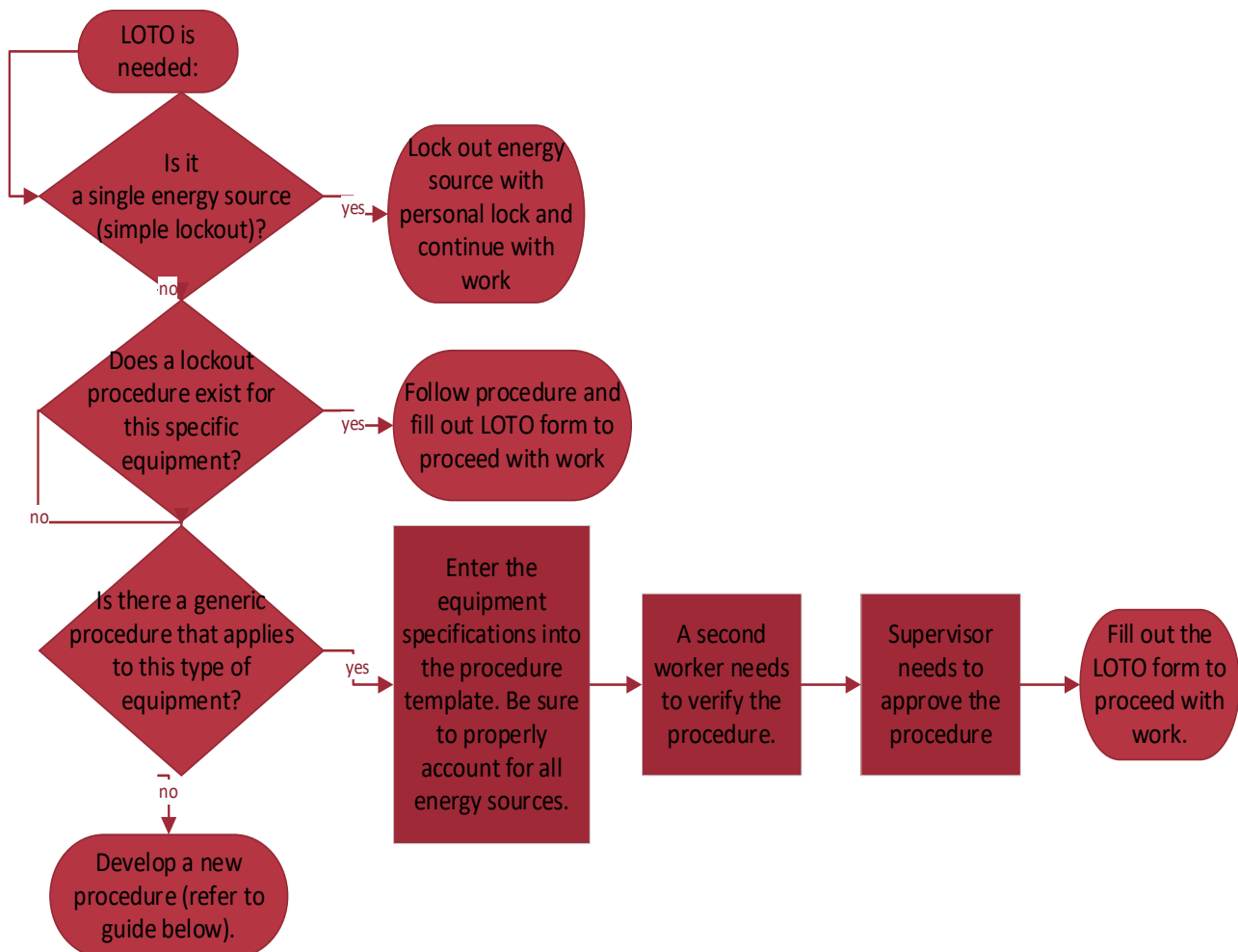
APPLICATION

A lockout-tag out is required whenever a repair or other job involves any of the following conditions:

- a worker needs to bypass a guard
- any part of a worker's body needs to be in contact with any part of a machine in operation
- a worker needs to enter a danger zone associated with a machine's operating cycle

NOTE: The purpose of a lockout/ tag-out is to prevent equipment from suddenly starting or causing an accident. Workers are prohibited from working on any equipment that has not been properly locked out.

When LOTO is required, use the following flow chart to determine the steps to follow:



DEFINITIONS

Simple Lockout: one energy source

- One worker: Must apply their personal lock to directly lock the energy source.
- Multiple workers: Must use a hasp so that each worker can apply their personal lock to lock the energy source.

Multiple Lockout: two or more energy sources

- Must place a serial lock on each energy source, then place all keys in lockout box. Each worker involved adds their personal lock to the lockout box.

Isolation device: A device that physically prevents the transmission or release of energy.

LOTO STEPS TO FOLLOW AT ALL TIMES

1. Prepare for equipment shutdown:
 - a. Received all necessary training.
 - b. Be aware and knowledgeable of all hazardous energy sources present.
 - c. Reviewed the lockout procedure.
 - d. Obtained the required lockout equipment.
2. Notify all affected employees.
3. Shut down equipment according to the normal method of operation.
4. Isolate energy sources according to the procedure instructions.
5. Apply LOTO devices to energy sources. Each worker* must affix their personal padlock to the energy source (in a simple lockout), or to the lockout box (multiple lockout).
6. Safely release/control the stored energy.
7. Check that LOTO is adequate – perform zero-energy checks.
8. Maintain the lockout until all work is complete.
9. Follow the LOTO release procedures when you are ready to return the equipment to service.

*Must fill-in and sign LOTO form for each LOTO procedure performed.

LOTO PROCEDURE DEVELOPMENT

Date document issued:
Document revision #:
Applicability
<ul style="list-style-type: none"> <input type="checkbox"/> To develop new procedures for a specific equipment, where a generic template is available for the same type of equipment. <input type="checkbox"/> To develop new procedures for equipment for which a generic template is unavailable.
PPE/Tools and equipment
<ul style="list-style-type: none"> <input type="checkbox"/> Each worker must attach their personal lock prior to working on the equipment. Depending on the type of lockout and number of workers, a personal lock must be attached to an energy source, a hasp, or a lockout box. At the end of a shift, each worker must remove their personal lock and a departmental lock must be placed instead to keep the equipment locked out. <input type="checkbox"/> You must use appropriate lockout devices for each isolation point to properly secure all energy sources. This may include: valve lockout devices, plug lockout devices, panel lockout devices, etc. <input type="checkbox"/> Depending on the job conditions, additional PPE may be required.
Preparation/requirements
<ul style="list-style-type: none"> <input type="checkbox"/> Only an authorized employee can be tasked with developing a new LOTO procedure. This refers to a competent person who has completed the University of Ottawa LOTO and site-specific training and is aware of all hazardous energy sources present. <input type="checkbox"/> The worker performing the lockout must be accompanied by a second competent worker to verify that lockout procedures have been applied properly. <input type="checkbox"/> An equipment inspection is required. <ul style="list-style-type: none"> <input type="checkbox"/> Note any defects, operational issues, wear and tear, health and safety hazards and other general problems. <input type="checkbox"/> If the equipment is unsafe, do not carry out the LOTO procedure. <input type="checkbox"/> Prior to performing the LOTO, investigate why any isolation devices are not in their normal operating position. <input type="checkbox"/> The person(s) developing the procedure will lockout the equipment to develop the procedure (effectively shutting it down). They must go through the procedure, step by step, to document it, and place all necessary lockout devices. <ul style="list-style-type: none"> <input type="checkbox"/> Call the power plant prior to performing the LOTO to prevent disruptions and false alarms. This must be noted in the procedure as the first step in the lockout sequence. <input type="checkbox"/> Notify other affected employees (e.g. building's facility manager) when the shutdown may affect the safety of others. <input type="checkbox"/> Use the LOTO procedure template.
Equipment Identification
<ul style="list-style-type: none"> <input type="checkbox"/> Procedure #: Assign a number to the procedure. <input type="checkbox"/> Equipment Name: type of equipment <input type="checkbox"/> Equipment #: ID as shown in the field <input type="checkbox"/> Location: in the same format as Archibus (building code - floor # - room #)
Equipment Remarks
<ul style="list-style-type: none"> <input type="checkbox"/> Identify all personal protective equipment that must be used or worn. <input type="checkbox"/> Specify the work order, if any, for the application of energy control devices. <input type="checkbox"/> List any affected employees who must be informed before performing LOTO. (e.g., power plant, building facility manager, etc.) <input type="checkbox"/> State any other special considerations related to the operation of the equipment.
Procedure:

Description of equipment shutdown, and sequence of isolation, blocking and control of residual energies.

Identify ALL energy sources and how to properly de-energize them. For each step, include:

Type of energy:

Energy type	Equipment examples	Energy examples
Fluids	Tanks, supply lines	Water, fuel, oil, glycol, air
Electrical	Power transmission lines, machine power cords, motors, solenoids	Electrical current , arc flash
Hydraulic	Hydraulic presses, hammers, rams, cylinders	Hydraulic oil
Pneumatic	Spraying devices, lines pressure reservoirs, accumulators	Pressurized air
Chemical	Storage tanks and other types of containment, mixing tanks	Refrigerants, fumes, glycol, oil
Thermal	Supply lines, storage tanks, vessels	Steam, hot water, chilled water
Radiation	Lasers, x-ray machines, radiography equipment, microwaves	X-rays , radio frequency, UV light
Mechanical	Actuators, springs, counterweights	Kinetic energy , potential energy
Gravitational	raised loads	Objects with potential to fall

- Isolation device:** Corresponding to energy source.
 - Device type:** Control panels, valves, bleeding points, etc.
 - Device #:** Physically identified in the field.
 - Location**
- Lockout devices:** Required to properly lockout isolation device. List the quantities and sizes.
- Lockout position:** How the isolation device must be placed to prevent energy from being released.

Zero Energy Check

- Include all testing procedures required to ensure that all energy sources remain controlled.
- List any specific control devices that need to be used for the checks (e.g., gauges, push buttons, panels, selectors, etc.), and their location.

Description of Commissioning Sequence

- Once the equipment LOTO is completed, return all equipment back to its normal position and restore the power.
- Return to Normal Position:** It means placement of the isolation device such that the equipment operates as intended.
- For all isolation points that were locked out, specify the sequence to return the equipment to service and the normal operating position of each.
 - You can omit specifying the sequence if the unlocking sequence is the exact opposite of the lockout steps, however, you must specify in the procedure that this is the case.

Procedure Verification and Approval

- Written by:** Name of authorized employee in charge of drafting the procedure, and date.
- Verified by:** Name of second worker who accompanied the authorized employee, and date.
- Approved by:** Name of supervisor or management team who reviewed and approved the procedure, and date.
 - You may need to test the procedure to validate its accuracy and effectiveness.
 - Supervisors may suggest changes or improvements, so there might be several reviews before a final version is ready for publication.
- When filling out the LOTO form, the worker applying the lockout is responsible for checking that the steps outlined in an existing procedure are still valid. If the procedure is outdated, the procedure must be corrected and validated again.

