Martin Technical™

Lockout / Tagout Program Overview

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Lockout / Tagout (LOTO) Program

PURPOSE

"Lockout/Tagout (LOTO)" refers to specific practices and procedures to safeguard employees from the unexpected energization or startup of machinery and equipment, or the release of hazardous energy during service or maintenance activities. This requires that a designated individual turns off and disconnects the machinery or equipment from its energy source(s) before performing service or maintenance and that the authorized employee(s) either lock or tag the energy-isolating device(s) to prevent the release of hazardous energy and take steps to verify that the energy has been isolated effectively.

Approximately 3 million workers service equipment and face the greatest risk of injury if lockout/tagout is not properly implemented. Compliance with the lockout/tagout standard (29 CFR 1910.147) prevents an estimated 120 fatalities and 50,000 injuries each year. Workers injured on the job from exposure to hazardous energy lose an average of 24 workdays for recuperation. In a study conducted by the United Auto Workers (UAW), 20% of the fatalities (83 of 414) that occurred among their members between 1973 and 1995 were attributed to inadequate hazardous energy control procedures specifically, lockout/tagout procedures.

OSHA CFR 29 1910.147 provides regulations on LOTO and 25 states have their own approved LOTO programs.

OSHA: According to OSHA, the employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

CALIFORNIA: CAL OSHA (8 CCR 2320.1, 2527.1, 2530.4, 3314) requires employers to provide written procedures for isolation of prime movers, machinery and equipment from mechanical, hydraulic, pneumatic, chemical, electrical, thermal or other energy sources. Specifically, requirements by CAL OSHA Section 3314(g) include a requirement to establish machine-specific written lockout/tagout procedures including procedural steps for all controls. The intent of this is to disallow boiler-plate or generalized LOTO programs and procedures that can be found as ineffective due to lack of specific information.

The Martin Technical LOTO program is designed to help prevent injuries and accidents with associated with equipment that should be locked-out/tagged-out and help companies meet OSHA and their state regulations for LOTO.

OBJECTIVES

- Identify Equipment that is subject to LOTO
- Develop written LOTO procedures for each specific piece of equipment
- Attach LOTO procedures on all required equipment
- Inform management and workers of the results
- Provide LOTO training to those that need it

SCOPE of WORK

LOTO procedures to be developed includes the isolation of any prime movers, machinery and equipment from mechanical, hydraulic, pneumatic, chemical, electrical, thermal or other energy sources.

LOTO procedures are to be developed in compliance with OSHA CFR 29 1910.147 and with any state OSHA regulations, including:

- The hazardous energy control procedures shall be documented in writing.
- The hazardous energy control procedure shall include separate procedural steps for the safe lockout/tagout of each machine or piece of equipment affected by the hazardous energy control procedure.
- The procedural steps for the safe lockout/tagout of prime movers, machinery or equipment may be used for a group or type of machinery or equipment, when either of the following two conditions exist:

1. (A) The operational controls named in the procedural steps are configured in a similar manner, and
   (B) The locations of disconnect points (energy isolating devices) are identified, and
   (C) The sequence of steps to safely lockout or tagout the machinery or equipment are similar.
2. The machinery or equipment has a single energy supply that is readily identified and isolated and has no stored or residual hazardous energy.

Not included in the scope of the project:

- Cord and plug-connected electrical equipment that is unplugged and the plug is within sight and under the exclusive control of the employee performing the service.
- Installations over 600 volts that are considered electric utility transmission and distribution which are subject to 29 CFR 1910.269.
- Minor tool changes and adjustments, other minor servicing, and normal production operations if they are routine, repetitive, and integral to the use of the equipment for production.

LOCKOUT / TAGOUT (LOTO) WORK PROCESS

PHASE I – EQUIPMENT & ENERGY SOURCE IDENTIFICATION

The first phase of any LOTO program is to identify all equipment subject to LOTO regulations and the energy sources that feed the equipment. Phase I is the labor intensive phase of the LOTO program, typically taking at least half of the total effort required to complete the program.

Equipment is surveyed on-site by a Martin Technical field engineer experienced and knowledgeable of LOTO processes as well as electrical, mechanical, hydraulic, pneumatic and thermal equipment. The field engineer will:

- Identify and document each piece of equipment requiring LOTO procedures
- Take photographs of the equipment
- Identify and document all power sources and isolation points feeding the equipment
- Take photographs of the feed equipment and isolation points as needed.
- Identify and document proper process for turning off / disconnecting power sources to the equipment.

Generally all survey can be collected without disturbing any facility operations.

Note:

1. The Martin Technical field engineer will need to be assisted by a qualified facility employee or someone knowledgeable of the plant or facility equipment and layout. This includes helping the Martin Technical field engineer to access equipment that may be in locked or secured areas and in locations that include using ladders, confined spaces or other hazardous areas.

2. The customer shall supply any required tools or equipment required to survey the equipment, including, but not limited to ladders and man-lifts.

3. The Martin Technical field engineer may refuse to enter a situation that appears unsafe due to the conditions of the environment until it is made safe. This includes hazardous plant operations as well as surveying outdoor equipment when the weather conditions or effects from the weather are deemed hazardous.

PHASE II – DEVELOPMENT of LOTO PROCEDURES

Using the information from the survey in Phase I, LOTO procedures are developed of each piece of equipment in accordance with OSHA CFR 29 1910.147 and applicable state regulations.

The procedures for each piece of equipment shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance, including but not limited to, the following:

(A) A statement of the intended use of the procedure;

(B) The procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;

(C) The procedural steps for the placement, removal and transfer of lockout devices and tagout devices and responsibilities; and,

(D) The requirements for testing a machine or equipment, to determine and verify the effectiveness of lockout devices, tagout devices and other hazardous energy control devices.

Most procedures shall be accompanied by photographs for visual instruction and identification.

The procedures are written and implemented into one of the following programs that can be modified by the customer:

- Word document with Martin Technical LOTO template
- LOTO software programs as determined by the customer. Note that using a LOTO software program directed by the customer may require the following additional charges:
    1. Purchase of the software by the customer for future self-modification
    2. Purchase of the software by Martin Technical (if not already owned) to develop the procedures.

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Lockout-Tagout Posted Procedure

ID #	MT104
Created:	9/2/08
Revised:	6/10/09

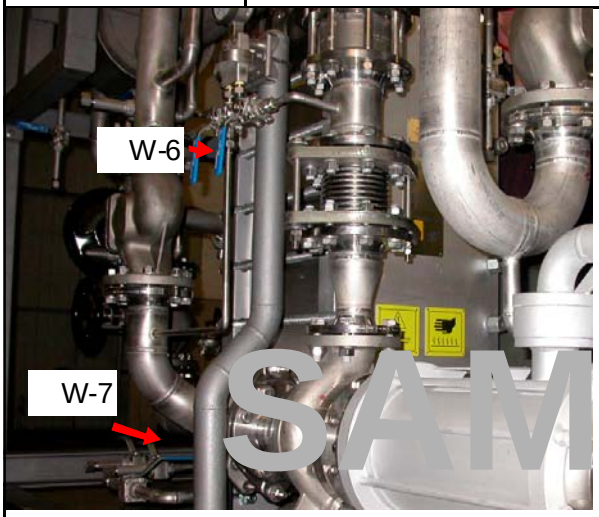
Water Pump

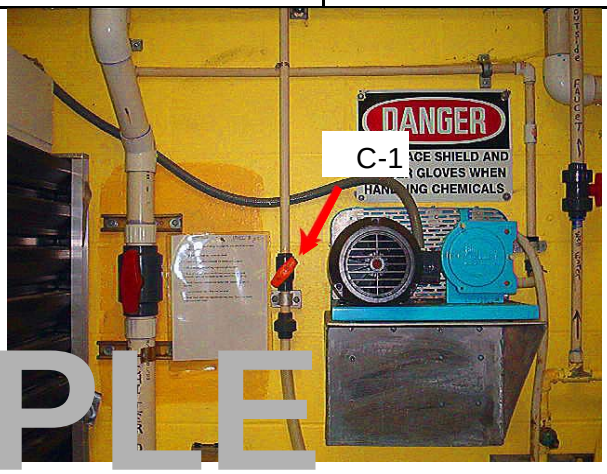
Building #2 | North Wall

LOCKOUT APPLICATION PROCESS

1. Notify affected personnel 2. Properly shut down machine 3. Isolate all energy sources 4. Apply lockout devices, locks, and tags 5. Verify total de-energization of all sources

Lockout Points	Notes	Lockout Authority
4	Drain Water Return after lockout	





ENERGY SOURCE	LOCATION	METHOD	QUALIFIED TASK
ELECTRICAL 480 VAC	MCC-2 3B	Turn off breaker, rackout	E-6
WATER Water Supply	Valve W-6 On East Side	Turn off valve	W-2
WATER Water Return	Valve W-7 On East Side	Turn off valve	W-2
CHEMICAL Chemical Feed	Chem 1 Valve C-1	Turn off valve	C-1

LOCKOUT REMOVAL PROCESS

1. Ensure all tools and items have been removed 2. Confirm that all employees are safely located. 3. Verify that controls are in neutral. 4. Remove lockout devices and reenergize machine 5. Nofity affected employees that servicing is completed.

PHASE III – CUSTOMER REVIEW

After the completion of Phase II, the LOTO procedures will be sent to the customer for review and sign-off before completing and printing the procedures.

PHASE IV – PRINTING OF LOTO PROCEDURES

After the procedures have been reviewed and approved by the customer, the LOTO procedures will be printed using one or more of the following manners and as directed by the customer:

- Crack-and-Peel stickers / placards
- Magnetic labels / placards
- Laminated paper attached with industrial two-sided tape
- Laminated paper attached with magnetic hook / clip
- Paper for notebook insertion

PHASE V – LABELING

LOTO process placards / informational sheets will be applied to the appropriate equipment by the Martin Technical field engineer

PHASE VI – TRAINING & CONSULTATION

After the LOTO procedures have been implemented, your Martin Technical field engineer will provide LOTO training for those who need it and will consult with management on any of the LOTO program requirements.

DELIVERABLES

The following are the deliverables upon completion of the LOTO program:

- Equipment Specific LOTO procedures printed on agreed media
- Application of LOTO procedure placards
- Electronic files of all LOTO procedures for each equipment
- Martin Technical LOTO procedure template (if not using LOTO software)
- LOTO training to those that need it
- Help with OSHA LOTO compliance

About Martin Technical

About Us

Martin Technical provides practical services for making facilities better, safer and more efficient. Our expert staff combines their real world work experiences of the past with today's technologies and best practices to provide our customers with the solutions and knowledge they need to maximize their operations and keep safe doing it. And because all our experts have in-field experience, we understand the difference between theory and application and are able to translate today's complex problems into simple solutions that can be implemented tomorrow.

About Our Customers

Our customers represent a broad spectrum, big and small, and we have provided services for virtually every type of company, plant or facility, including:

- Manufacturing Plants
- Schools & Universities
- Data & Service Centers
- Airports
- Government & Military
- Hospitals
- R&D Facilities
- Public Buildings
- Energy & Utility Plants
- Water & Waste Water
- Hotel & Hospitality
- Commercial Buildings

Liability / Insurance

We carry the following insurance policies:

- General Liability - $2 Million per occurrence / $4 Million aggregate policy
- Professional Liability - $1 Million policy

In addition, any outside engineers used on projects are required to have their own individual professional liability and general liability insurance.