Lockout Tagout - Control of Hazardous Energy

PURPOSE

The purpose of this document is to outline the Lockout Tagout Program for **Fisher Systems Inc.**; hereafter referred to as "The Company." Control of Hazardous energy is the purpose of the Lockout Tagout Program.

This program establishes the requirements for isolation of both kinetic and potential electrical, chemical, thermal, hydraulic, pneumatic and gravitational energy prior to equipment repair, adjustment, or removal. Reference: OSHA Standard 29 CFR 1910. 147, the control of hazardous energy.

POLICY

Hazards

Improper or failure to use Lockout Tagout procedures may result in:

- Electrical shock
- Chemical exposure
- Skin burns
- Lacerations and amputation
- Fires and explosions
- Chemical releases
- Eye injury
- Death

HAZARD CONTROLS

- Only authorized and trained employees may engage in tasks that require use of Lockout Tagout procedures.
- All equipment has single sources of electrical power.
- Lockout procedures have been developed for all equipment and processes.
- Restoration from Lockout is a controlled operation.

Potential energy may include any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

AUTHORIZED EMPLOYEES TRAINING

All Maintenance Employees, Department Supervisors and Janitorial employees will be trained to use the Lock and Tagout Procedures. To ensure the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees.

The training will be conducted by the Maintenance Supervisor or Safety Coordinator at time of initial hire. Retraining shall be held at least annually. The training will consist of the following:

- Review of General Procedures;
- Review of Specific Procedures for machinery, equipment, and processes;
- Location and use of Specific Procedures;
- Procedures when questions arise;
- Recognition of hazardous energy source;
- Type and magnitude of energy available;
- Methods and means necessary for energy isolation and control;
- All affected employees are instructed in the purpose and use of the energy control procedure;
- The tag is never to be ignored or defeated in any way.

Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.

AFFECTED EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery, equipment, or processes.
- Affected Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.
- Purpose and use of the lockout procedures.
- All affected employees are instructed in the purpose and use of the energy control procedure.
- When tagout systems are used including the limitations of a tag (tags are warning devices and do not provide physical restraint).
- The tag is never to be ignored or defeated in any way.

OTHER EMPLOYEE TRAINING

- Only trained and authorized Employees will repair, replace, or adjust machinery or equipment.
- Other Employees may not remove Locks, locking devices or tags from machinery, equipment, or circuits.
- Any other employee whose work operations are or may be in an area where energy control procedures may be utilized.
- The tag is never to be ignored or defeated in any way.

RETRAINING

Retraining is required when there is a change in job assignments, in machines, a change in the energy control procedures, or a new hazard is introduced.

All training and retraining shall be documented, signed, and certified.

PREPARATION OF LOCK OUT AND TAG OUT TRAINING

A Lockout Tagout Survey has been conducted to locate and identify all energy sources to verify which switches or valves supply energy to machinery and equipment. Dual or redundant controls have been removed.

Devices shall indicate the identity of the employee applying the device.

A Tagout Schedule has been developed for each piece of equipment and machinery. This schedule describes the energy sources, location of disconnects, type of disconnect, special hazards and special safety procedures. The schedule will be reviewed each time to ensure employees properly lock and tag out equipment and machinery. If a Tagout Schedule does not exist for a particular piece of equipment, machinery, and process, one must be developed prior to conducting a Lockout Tagout. As repairs and/or renovations of existing electrical systems are made, standardized controls will be used.

ROUTINE MAINTENANCE AND MACHINE ADJUSTMENTS

Lock and Tag Out procedures are not required if equipment must be operating for proper adjustment. This rare exception may be used only by trained and authorized Employees when specific procedures have been developed to safely avoid hazards with proper training. All consideration shall be made to prevent the need for an employee to break the plane of a normally guarded area of the equipment by use of tools and other devices.

LOCKS HASPS AND TAGS

All Qualified Maintenance Personnel will be assigned a lock with one key, hasp, and tag. All locks will be keyed differently, except when a specific individual is issues a series of locks for complex Lockout Tagout tasks. In some cases, more than one lock, hasp and tag are needed to completely de-energize equipment and machinery. Additional locks may be checked out from the Department or Maintenance Supervisor on a shift-by-shift basis. All locks and hasps shall be uniquely identifiable to a specific employee.

REQUIREMENTS FOR LOCKOUT TAGOUT DEVICES

Lockout devices and tagout devices shall be singularly identifiable; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:

- **Durable**
  - Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
  - Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
  - Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- **Standardized**
  - Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
- **Substantial**
  - Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
  - Tagout devices. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- **Identifiable**
  - Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).

GENERAL LOCK AND TAGOUT PROCEDURES

Before working on, repairing, adjusting, or replacing machinery and equipment, the following procedures will be utilized to place the machinery and equipment in a neutral or zero mechanical state. The circuits and equipment to be worked on shall be disconnected from all electric energy sources. Control circuit devices, such as push buttons, selector switches, and interlocks, may not be used as the sole means for deenergizing circuits or equipment. Interlocks for electric equipment may not be used as a substitute for lockout and tagging procedures.

Stored electric energy which might endanger personnel shall be released. Capacitors shall be discharged, and high capacitance elements shall be short-circuited and grounded, if the stored electric energy might endanger personnel.

Note: If the capacitors or associated equipment are handled in meeting this requirement, they shall be treated as energized.

Stored non-electrical energy in devices that could reenergize electric circuit parts shall be blocked or relieved to the extent that the circuit parts could not be accidentally energized by the device. 1910.333(b)(2)(ii)(B)

A lock and tag shall be placed on each disconnecting means to deenergize circuits and equipment on which work is to be performed. Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

A Qualified Person
A qualified person shall verify that the equipment cannot be restarted as well as test and verify that the circuit elements and equipment part(s) are deenergized. A qualified person shall conduct tests and visual inspections to verify all tools, shorts, grounds, etc. have been removed so that circuits and equipment can be safely energized. 1910.333(b)(2)(v)(A)

SHIFT OR PERSONNEL CHANGES

Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

ENERGY ISOLATING DEVICE

If an energy isolating device is not capable of being locked out, The Company energy control program shall utilize a tagout system. If an energy isolating device is capable of being locked out, The Companies energy control program shall utilize lockout, unless The Company can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in 1910.147(c)(2)(iii) paragraph (c)(3) of this section. After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

FULL EMPLOYEE PROTECTION

When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and The Company shall demonstrate that the tagout program will provide a level of safety equivalent to that obtained by using a lockout program. 1910.147(c)(3)(i)

In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, The Company shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

Notification of Employees

Affected employees shall be notified by The Company or authorized employee of the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment. 1910.147(c)(9)

Preparation for Shutdown

- Before authorized or affected employees turn off a machine or piece of equipment, the authorized employee will have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the means to control the energy.
- An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
- Notify all affected Employees that the machinery, equipment, or process will be out of service.

Machine or Equipment Shutdown

- The machine or equipment will be turned or shut down using the specific procedures for that specific machine.
- An orderly shutdown will be utilized to avoid any additional or increased hazards to employees as a result of equipment de-energization.
- If the machinery, equipment, or process is in operation, follow normal stopping procedures (depress stop button, open toggle switch, etc.).
- Move switch or panel arms to "Off" or "Open" positions and close all valves or other energy isolating devices so that the energy source(s) is disconnected or isolated from the machinery or equipment.

Machine or Equipment Isolation

- All energy control devices that are needed to control the energy to the machine or equipment will be physically located and operated in such a manner as to isolate the machine or equipment from the energy source.

Protective Materials and Hardware

- Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by The Company for isolating, securing, or blocking of machines or equipment from energy sources.
- Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the requirements for 29 CFR 1910.147.

Lockout or Tagout Device Application

- Lockout or tagout devices will be affixed to energy isolating devices by authorized employees.
- Lockout devices will be affixed in a manner that will hold the energy isolating devices from the "safe" or "off" position.
- Where tagout devices are used they will be affixed in such a manner that will clearly state that the operation or the movement of energy isolating devices from the "safe" or "off" positions is prohibited.
- The tagout devices will be attached to the same point a lock would be attached.
- If the tag cannot be affixed at that point, the tag will be located as close as possible to the device in a position that will be immediately obvious to anyone attempting to operate the device.
- Lock and tag out all energy devices by use of hasps, chains and valve covers with an assigned individual lock.

Stored Energy

- Following the application of the lockout or tagout devices to the energy isolating devices, all potential or residual energy will be relieved, disconnected, restrained, and otherwise rendered safe.
- Where the re-accumulation of stored energy to a hazardous energy level is possible, verification of isolation will be continued until the maintenance or servicing is complete, or until the possibility of such accumulation no longer exists.
- Release stored energy (capacitors, springs, elevated members, rotating fly wheels, and hydraulic/air/gas/steam systems) must be relieved or restrained by grounding, repositioning, blocking and/or bleeding the system.

Verification of Isolation

- Prior to starting work on machines or equipment that have been locked or tagged out, the authorized employees will verify that isolation or de-energization of the machine or equipment have been accomplished.
- After assuring that no Employee will be placed in danger, test all lock and tag outs by following the normal start up procedures (depress start button, etc.).

Caution: After Test, place controls in neutral position.

GROUP LOCKOUT SETTINGS/MULTIPLE WORKERS

Where a crew of authorized employees may use a lockout or tagout device, the following procedures shall be followed to ensure the group of employees a level of protection equal to that provided by a personal lockout or tagout device.

An authorized employee will be designated to have primary responsibility for a set number of employees working under the protection of a group lockout or Tagout device.

- A pre-work kick-off safety meeting will be held to review the lockout tagout procedure for the project
- Each employee shall attach a personal lockout or tagout device to the group's device while he/she is working and then removes it when finished
- During shift change or personnel changes, there should be specific procedures to ensure the continuity of lockout or tagout procedures
- Documentation shall be specific and shall be retained

Extended Lockout Tagout

Should the shift change before the machinery or equipment can be restored to service, the lock and tag out must remain. If the task is reassigned to the next shift, those Employees must lock and tag out before the previous shift may remove their lock and tag.

Release from Lockout Tagout

Before lockout or tagout devices are removed and the energy restored to the machine or equipment, the following actions will be taken:

- The work area will be thoroughly inspected to ensure that nonessential items have been removed and that machine or equipment components are operational.
- The work area will be checked to ensure that all employees have been safely positioned or removed. Before the lockout or tagout devices are removed, the affected employees will be notified that the lockout or tagout devices are being removed.
- Each lockout or tagout device will be removed from each energy isolating device by the employee who applied the device.

LOTO PROCEDURE FOR ELECTRICAL PLUG TYPE EQUIPMENT

This procedure covers all Electrical Plug-Type Equipment such as Battery Chargers, some Product Pumps, Office Equipment, Powered Hand Tools, Powered Bench Tools, Lathes, Fans, etc.

When working on, repairing, or adjusting the above equipment, the following procedures must be utilized to prevent accidental or sudden startup:

- Unplug Electrical Equipment from wall socket or in-line socket.
- Attach "Do Not Operate" Tag and Plug Box and Lock on end of power cord.

An exception is granted to not lock and tag the plug is the cord and plug remain in the exclusive control of the Employee working on, adjusting, or inspecting the equipment.

- Test Equipment to assure power source has been removed by depressing the "Start" or "On" Switch.
- Perform required operations.
- Replace all guards removed.
- Remove Lock and Plug Box and Tag.
- Inspect power cord and socket before plugging equipment into power source. Any defects must be repaired before placing the equipment back in service.

NOTE: Occasionally used equipment may be unplugged from power source when not in use.

LOTO PROCEDURE INVOLVING MORE THAN ONE EMPLOYEE

In the preceding SOPs, if more than one Employee is assigned to a task requiring a lock and tag out, each must also place his or her own lock and tag on the energy isolating device(s).

MANAGEMENT OF LOCK AND TAGOUTS

Only the Employee that locks and tags out machinery, equipment or processes may remove his/her lock and tag. However, should the Employee leave the facility before removing his/her lock and tag, the Maintenance Manager may remove the lock and tag. The Maintenance Manager must be assured that all tools have been removed, all guards have been replaced and all Employees are free from any hazard before the lock and tag are removed and the machinery, equipment or process are returned to service. Notification of the employee who placed the lock is required prior to lock removal.

REMOVAL OF AN AUTHORIZED EMPLOYEE'S LOCKOUT TAGOUT BY THE COMPANY

Locks/tags will only be removed in cases where the authorized employee who applied it is not available. When the authorized employee who applied the Lockout Tagout device is not available to remove it, that device may be removed by the safety manager or their designee by following the specific procedure.

Each location must develop written procedures that comply with 29 CFR 1910.147(e)(3).

Emergency procedures for removing Lockout Tagout should include the following:

- Making all reasonable efforts to contact the authorized and affected employees to inform them that their LOTO device has been removed.
- Verification by The Company that the authorized employee who applied the LOTO device is not at the facility by checking timecards, parking lot, radio announcement, etc.
- A thorough inspection of the machine or device shall be made by **Jim Aarstad** to confirm that the machine or equipment components are operationally intact.
- **Jim Aarstad** or designee shall remove the LOTO device, providing that they have determined that the starting up of the machine/equipment will not endanger other personnel.
- Informing and providing the employee who's locks/tags were removed with replacement locks/tags.

LOCKOUT OR TAGOUT DEVICES REMOVAL

Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of The Company, provided that specific procedures and training for such removal have been developed, documented, and incorporated into The Company's energy control program. The Company shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. 29 CFR 1910.147 (e)(3)

The specific procedure shall include at least the following elements:

- Verification by The Company that the authorized employee who applied the device is not at the facility:
- Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and
- Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.

If an energy isolating device is **not** capable of being locked out, the company's energy control program under this section shall utilize a tagout system. If an energy isolating device is capable of being locked out, the employer's energy control program under this section shall utilize lockout, unless the company can demonstrate that the utilization of a tagout system, will provide full employee protection as set forth in paragraph (c)(3) of section 1910.147(c)(3)(iii).

After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.

TESTING OR POSITIONING OF MACHINES, EQUIPMENT OR COMPONENTS

In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions in accordance to 29 CFR 1910.147 (f)(1)(i) shall be followed:

- Clear the machine or equipment of tools;
- Remove employees from the machine or equipment area;
- Remove the lockout or tagout devices as specified in 29 CFR 1910.147 (e)(3);
- Energize and proceed with testing or positioning;
- Deenergize all systems and reapply energy control measures.

INSPECTION

The Company shall conduct a periodic inspection of the energy control procedure, at least annually, to ensure that the procedure and the requirements of this standard are being followed. Periodic inspection shall be performed by an authorized company employee other than the ones(s) utilizing the energy control procedure being inspected. Periodic inspection are to be conducted to correct any deviations or inadequacies identified.

Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected.

The Company shall certify that the periodic inspections have been performed.

The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection. 1910.147(c)(6)(i) through 1910.147(c)(6)(ii)

CONTRACTORS

Contractors, working on company property and equipment must use this Lockout Tagout procedure while servicing or maintaining equipment, machinery, or processes.

DEFINITIONS

Authorized (Qualified) Employees are the only ones certified to lock and tagout equipment or machinery. Whether an employee is considered to be qualified will depend upon various circumstances in the workplace. It is likely for an individual to be considered "qualified" with regard to certain equipment in the workplace, but "unqualified" as to other equipment. An employee who is undergoing on-the-job training and who, in the course of such training, has demonstrated an ability to perform duties safely at his or her level of training and who is under the direct supervision of a qualified person, is considered to be "qualified" for the performance of those duties.

Affected Employees are those employees who operate machinery or equipment upon which lockout or tagging out is required under this program. All affected employees will be Notified before the application of lockout or tagout devices. Training of these individuals will be less stringent in that it will include the purpose and use of the lockout procedures.

Other Employees are identified as those that do not fall into the authorized, affected or qualified employee category. Essentially, it will include all other employees. These employees will be provided instruction in what the program is and not to touch any machine or equipment when they see that it has been locked or tagged out.

Zero Energy State is a condition in which all sources of energy have been removed or neutralized.