



### What is the OSHA standard for control of hazardous energy sources?

The OSHA standard for *The Control of Hazardous Energy (Lockout/Tagout)*, Title 29 Code of Federal Regulations (CFR) Part 1910.147, addresses the practices and procedures necessary to disable machinery or equipment, thereby preventing the release of hazardous energy while employees perform servicing and maintenance activities. The standard outlines measures for controlling hazardous energies—electrical, mechanical, hydraulic, pneumatic, chemical, thermal, and other energy sources.

In addition, 29 CFR 1910.333 sets forth requirements to protect employees working on electric circuits and equipment. This section requires workers to use safe work practices, including lockout and tagging procedures. These provisions apply when employees are exposed to electrical hazards while working on, near, or with conductors or systems that use electric energy.

### Why is controlling hazardous energy sources important?

Employees servicing or maintaining machines or equipment may be exposed to serious physical harm or death if hazardous energy is not properly controlled. Craft workers, machine operators, and laborers are among the 3 million workers who service equipment and face the greatest risk. Compliance with the lockout/tagout standard 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.

### How can you protect workers?

The lockout/tagout standard establishes the employer's responsibility to protect employees from hazardous energy sources on machines and equipment during service and maintenance.

The standard gives each employer the flexibility to develop an energy control program suited to the needs of the particular workplace and the types of machines and equipment being maintained or serviced. This is generally done by affixing the appropriate lockout or tagout devices to energy-isolating devices and by deenergizing machines and equipment. The standard outlines the steps required to do this.

### What do employees need to know?

Employees need to be trained to ensure that they know, understand, and follow the applicable provisions of the hazardous energy control procedures. The training must cover at least three areas: aspects of the employer's energy control program; elements of the energy control procedure relevant to the employee's duties or assignment; and the various requirements of the OSHA standards related to lockout/tagout.

### What must employers do to protect employees?

The standards establish requirements that employers must follow when employees are exposed to hazardous energy while servicing and maintaining equipment and machinery. Some of the most critical requirements from these standards are outlined below:

- Develop, implement, and enforce an energy control program.
- Use lockout devices for equipment that can be locked out. Tagout devices may be used in lieu of lockout devices only if the tagout program provides employee protection equivalent to that provided through a lockout program.
- Ensure that new or overhauled equipment is capable of being locked out.
- Develop, implement, and enforce an effective tagout program if machines or equipment are not capable of being locked out.

- Develop, document, implement, and enforce energy control procedures. [See the note to 29 CFR 1910.147(c)(4)(i) for an exception to the documentation requirements.]
- Use only lockout/tagout devices authorized for the particular equipment or machinery and ensure that they are durable, standardized, and substantial.
- Ensure that lockout/tagout devices identify the individual users.
- Establish a policy that permits only the employee who applied a lockout/tagout device to remove it. [See 29 CFR 1910.147(e)(3) for exception.]
- Inspect energy control procedures at least annually.
- Provide effective training as mandated for all employees covered by the standard.
- Comply with the additional energy control provisions in OSHA standards when machines or equipment must be tested or repositioned, when outside contractors work at the site, in group lockout situations, and during shift or personnel changes.

## How can you get more information?

OSHA has various publications, standards, technical assistance, and compliance tools to help you, and offers extensive assistance through

its many safety and health programs: workplace consultation, voluntary protection programs, grants, strategic partnerships, state plans, training, and education. Guidance such as OSHA's *Safety and Health Management Program Guidelines* identify elements that are critical to the development of a successful safety and health management system. This and other information are available on OSHA's website at [www.osha.gov](http://www.osha.gov).

- For a free copy of OSHA publications, send a self-addressed mailing label to this address: OSHA Publications Office, P.O. Box 37535, Washington, DC 20013-7535; or send a request to our fax at (202) 693-2498, or call us at (202) 693-1888.
- To file a complaint by phone, report an emergency, or get OSHA advice, assistance, or products, contact your nearest OSHA office under the "U.S. Department of Labor" listing in your phone book, or call us toll-free at **(800) 321-OSHA (6742)**. The teletypewriter (TTY) number is (877) 889-5627.
- To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website.

This is one in a series of informational fact sheets highlighting OSHA programs, policies, or standards. It does not impose any new compliance requirements or carry the force of legal opinion. For compliance requirements of OSHA standards or regulations, refer to *Title 29 of the Code of Federal Regulations*. This information will be made available to sensory-impaired individuals upon request. Voice phone: (202) 693-1999. See also OSHA's website at [www.osha.gov](http://www.osha.gov).



# CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

## Sample Lockout/Tagout Program

# CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

## General Purpose:

1. To prevent the unexpected start-up, or energization of machinery and equipment which could cause injury to employees during service and maintenance operations.
2. To prevent the release of stored energy which could cause injury to employees.

## Energy Sources:

Electrical  
Pneumatic  
Gravity

Thermal  
Hydraulic

Chemical  
Mechanical

## Important:

All sources of energy that have the potential to unexpectedly start up, energize, or release must be identified, and blocked or released before servicing or maintenance is performed.

## Lockout/Tagout Program

You must have a written program which includes:

1. A specific statement as to the intended use of the program.
2. Specific steps for shutting down, isolating, and blocking machinery and equipment to control hazardous energy.
3. Specific procedures for placing and removing lockout/tagout devices and for identifying an individual's locks or tags.
4. Requirements for verifying the effectiveness of the lockout/tagout device by testing procedures for machinery and equipment.
5. A detailed training program for employees who perform the service and maintenance and for employees who are indirectly affected by those operations.
6. Descriptions of company lockout/tagout policies regarding multiple lockout/tagouts, outside personnel, shift changes, and training of employees.

## Lockout/Tagout does not apply to:

### Normal Production Operations

- Minor tool changes or adjustments
- Routine, repetitive and integrated activities that are required to use the equipment

### Unless the Employee is Required to:

- Remove or bypass a guard or other safety device.
- If an employee has to place any part of his body into the point of operation.

# CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

Date: \_\_\_\_\_

In accordance with the of OSHA's Control of Hazardous Energy (Lockout/Tagout) Standard, 29 CFR 1910.147, the following plan has been developed by, \_\_\_\_\_, (hereafter referred to as "the Company") to establishing a uniform lockout/tagout procedure is to protect all employees from personal injury as a result of the unexpected energization, start-up, or release of stored energy from machine, equipment, or process. An energy isolating device is defined as a mechanical device that physically prevents the transmission or release of energy. The Company has designated \_\_\_\_\_, as the primary contact person, and \_\_\_\_\_, as the back up contact person. These individuals are responsible for the maintaining all records and documentation, providing appropriate personal protect equipment (PPE), locks, tags and training as required by this standard.

It is the policy of this Company to have a Hazardous Energy Control Program that includes employee training and requires that each piece of machinery or equipment, where the unexpected energizing, start up, or release of stored energy could cause injury, be isolated and made inoperative via an established procedure before any employee performs maintenance or service.

The program procedures consist of:

1. De-energization of equipment
2. Isolation of the equipment from all energy sources
3. Verification of de-energization before servicing and maintenance.
4. Identification and training of employees who either perform the servicing and maintenance or are affected by those operations.

## DEFINITIONS:

**AUTHORIZED EMPLOYEES** have been instructed on the importance of the lockout/tagout procedure. An authorized employee is defined as an employee who has been approved to lockout or tagout machines or equipment for the purpose of performing service or maintenance on that machine or equipment. The names of authorized employees have been recorded, describing the type of equipment they are trained to lockout.

**AFFECTED EMPLOYEES**, and all other employees whose work operations are or may be in the area, have been instructed in the purpose and use of the lockout/tagout procedure. An affected employee is any employee who operates a machine or equipment on which service or maintenance is being performed under lockout or tagout or who works in an area in which such service or maintenance is being performed under a lockout or tagout procedure.

An affected employee becomes an authorized employee if the employee's duties include performing service or maintenance on machines or equipment under a lockout or tagout procedure.

An **Energy Source** is defined as any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy. Definitions of each energy source can be found in Appendix 1.

# CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

## PREPARATION FOR LOCKOUT AND/OR TAGOUT

All machinery and equipment will be locked out unless:

- An energy isolating device is not capable of being locked out, in which case a tagout system will be used, and it can be demonstrated that a tagout will provide full employee protection.
- When a tagout system is used, full employee protection is obtained and the tagout system provides the same level of protection as a lockout system.
- Additional necessary elements to ensure equipment protection equal to a lockout device will be provided. Additional necessary elements include:
  1. Removing an isolating circuit element,
  2. Blocking a controlling switch
  3. Opening an extra disconnecting device, or
  4. Disabling of a valve handle to reduce the risk of inadvertent energization.

An audit has been conducted to locate and identify all energy isolating devices in order to be certain what devices apply to what equipment. The Company recognizes that more than one type of energy source may be involved in certain areas.

Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware are supplied by this Company for isolating, securing, or blocking machines or equipment from energy sources. Lockout and tagout devices are distinctively identified, such as a distinct color, are not used for any other purposes than as devices used for controlling energy.

## LOCKOUT AND TAGOUT DEVICES

### Durable

- Lockout/tagout devices are capable of withstanding the environment to which they are exposed for the maximum period of time the exposure is expected.
- Tagout devices are constructed and printed so that exposure to weather conditions or to wet and damp locations does not cause the tag to deteriorate or the message on the tag to become unreadable.
- Tags do not deteriorate when used in corrosive environments, such as areas where acid and alkali chemicals are handled and stored. Before working in a corrosive environment or with chemicals, the employee must refer to the Company's written Hazard Communication Program for further information.

### Standardized

- Lockout and tagout devices are standardized. The Company uses **Red** as a standard color to identify lockout and tagout devices.

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## Substantial

- Lockout devices are dependable enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutter or other metal cutting tools.
- Tagout devices and their means of attachment are substantial enough to prevent their unintended or accidental removal. To meet this requirement, the Company requires that the means of attachment for the tagout device be at least equivalent to an all-environment-tolerant nylon cable tie with a minimum unlocking strength of at least 50 pounds.

## Identifiable

- Lockout and tagout devices indicate the identity of the employee authorized to apply and to remove the device. Tagout devices warn against hazardous conditions if the machine or equipment is energized and include a legend such as the following:
  1. Do not start
  2. Do not open
  3. Do not close
  4. Do not energize
  5. Do not operate

The authorized employee will inspect his lockout and tagout devices daily and, if the lock is defective, immediately stop and report to the responsible person(s) outlined in this plan. The Company uses mobile equipment. A list of the equipment that is included within the scope of this program is located in Appendix 2. Detailed written procedures for safely servicing this equipment have been developed.

Mobile equipment is not designed for the application of a lock during service and maintenance. Therefore, tags are used in addition to the ignition key locks. Tags are placed at the ignition switch, and the keys are removed to prevent an unexpected start-up of the equipment. The keys remain in the possession of the person (authorized employee) conducting the service. If necessary, tags are placed in areas where controls (brake levers, wheel chocks, battery disconnects, etc.) are located for de-energizing or immobilizing the equipment.

## STANDARD LOCKOUT/TAGOUT PROCEDURES

### Isolating Energy

1. All affected employees are notified that a lockout or tagout procedure is to be used and the reasons explained. The authorized employee reviews the type and magnitude of energy that the machine or equipment uses and understands all the hazards associated with it.
2. If the machine is operating, the employee shuts it down using standard operating procedures. Examples include pressing the stop button, opening toggle switches, and closing valves.
3. Stored energy is released or restrained by methods such as repositioning, blocking, bleeding, or other methods. The authorized employee maneuvers the switch, valve, or other energy isolating device, so the equipment is isolated from its energy source. Stored energy could be in springs; elevated machine members; rotating flywheels; hydraulic systems; or air, gas, steam or water pressure.
4. The energy isolating devices are locked out and/or tagged out with assigned individual locks or tags. The authorized employee who attaches a lock is the only person, other than the responsible person(s) outlined in this plan, who has a key for removing it.

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5. After determining that no personnel is exposed, the authorized employee operates the push button or the normal operating controls to make certain that the equipment will not operate. This is a test to check that the equipment is disconnected from its energy source. The authorized employee returns all operating controls to the neutral, or off, position after the test.
6. The equipment is now locked/tagged out and ready to be serviced.

### **Restoring Energy to Equipment**

1. The authorized employee checks the equipment to be certain that all tools have been removed, all guards have been reinstalled properly, and that employees are in the clear.
2. After work on the machine or equipment is finished and it is ready for normal operations, the authorized employee checks the area around the equipment to be certain that employees are not in danger.
3. The authorized employee informs any affected employees that the lockout/tagout device is about to be removed so that they can prepare for the resumption of normal operations of the equipment.
4. The authorized employee then removes the lockout and/or tagout device to restore energy to the machine, equipment, or system.
5. The lockout or tagout device may only be removed by the employee who applied the device. If the authorized employee who installed the lock or tag is not available to remove it, the device may be removed only under the direction of the responsible person(s) outlined in this plan.
6. When a lock or tag must be removed by the responsible person(s), he / she utilizes the following specific procedure:
  - He confirms that the authorized employee is no longer at the facility.
  - Every reasonable effort is made to inform the authorized employee that the employee's lock or tag has been removed from the energy isolating device.
  - The authorized employee is informed that the lockout/tagout device was removed before resuming work at the site.

### **Procedures for Multiple Lockout**

If more than one person is involved in the service maintenance of the machine or equipment, each individual places a lockout and/or tagout device on the energy isolating device. If the energy isolating device will not accept multiple locks or tags, a multiple lockout or tagout device (a hasp) is used.

### **Testing and Positioning of Machines and Equipment**

If the machine or equipment must be temporarily energized to test or position a component, the locks or tags are temporarily removed from the energy isolating device provided these procedures have been followed:

1. The work area has been cleared of tools and materials and the machine or equipment components are operationally intact.
2. Employees have been removed from the machine or equipment area and affected employees have been notified that lockout/tagout devices have been removed.
3. Each lock and/or tag has been removed by the employee who installed it.
4. The machine or equipment is then energized, and the testing or positioning proceeds.



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5. Once testing or positioning is completed and before further service is performed, all systems are de-energized and all the energy control measures reapplied in the manner described in the specific lockout procedure.

## Outside Personnel

Whenever outside personnel are engaged in activities that are covered by the scope and application of OSHA's Control of Hazardous Energy (Lockout/Tagout) Standard, the on-site employer and the outside employer inform each other of their respective lockout or tagout procedures. The on-site employer ensures that all employees understand and comply with the restrictions and restraints of the outside employer's energy control procedures.

## Periodic Inspection Program

The responsible person(s) outlined in this plan conducts an inspection of the energy control procedures at least once a year to ensure that the proper procedures and requirements of this program are being followed.

- The inspection is conducted by the responsible person(s) outlined in this plan and an authorized employee other than the one who utilizes the energy control procedure being inspected.
- Flaws or deviations observed during the inspection are corrected.
- When locks are used as the energy control method, the inspection includes a review between the inspector and the authorized employee regarding that employee's responsibilities under the energy control procedure being inspected.
- When the tagout system is being used, the inspector reviews with each authorized and affected employee each employee's responsibilities under the energy control procedure being inspected. The inspector also reviews the tag training procedure.

This company documents that periodic inspections have been performed. The documentation in Appendix 3 includes:

- The identity of the machine or equipment on which the energy control procedure was utilized.
- The date of the inspection
- The employees included in the inspection
- The person performing the inspection

## Training

The Company provides training to ensure the purpose and function of this energy control program are understood by the employees. The required knowledge and skill necessary for the safe application, usage, and removal of energy controls is taught to the employees by the responsible person(s) outlined in this plan or those authorized by the company management. This training takes place when the lockout/tagout program is implemented and includes:

- Each authorized employee receives training in the recognition of all applicable hazardous energy sources, the type and magnitude of energy available in the workplace, and the methods and means necessary for energy isolation and control. It is made clear to all employees that locks or tags belonging to other employees are not to be removed from an energy control device.

## CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

- Every affected employee is taught the purpose and use of the energy control procedure
- All other employees whose work operations are or may be in the area where energy control procedures are used, are instructed about the procedure and about the prohibition relating to attempts to restart or re-energize machines or equipment that have been locked or tagged out.

When the tagout device is used, employees are trained on the limitations of tags:

- Tags are warning devices attached to energy isolating devices, and do not provide physical restraint on those devices like that which is provided by a lock.
- When a tag is attached to an energy isolating device, it is not to be removed without the permission of the authorized person responsible for it. It is never to be bypassed, ignored, or otherwise defeated.
- In order to be effective, tags must be readable and understandable by authorized, affected, and other employees whose work operations are, or may be, in the area.
- Tags, and their means of attachment, must be made of materials which will withstand workplace environmental conditions.
- Tags may evoke a false sense of security. Their meaning must be understood in order to be effective as part of the overall energy control program.
- Tags must be securely attached to energy isolating devices so they do not accidentally or inadvertently detach during use.

When training is completed, the company documents that each employee has been trained and understands the lockout/tagout system. The documentation includes the instructor's name, employee's name, and the date of training. This documentation is located in Appendix 4.

### Retraining and Refresher Training:

- Retraining is provided to all affected and authorized employees whenever there is a change in their job assignments or a change in machines, equipment, or processes, that presents a new hazard or when there is a change in the energy control procedures.
- Additional retraining also occurs whenever a periodic inspection gives the company reason to believe that there are deviations from, or inadequacies in, the employee's knowledge or use of energy control procedures.
- All employees will receive annual refresher training, which will be conducted within one year of the employee's previous training.

### Recordkeeping

All records required by OSHA standard will be maintained by the responsible person(s) outlined in this plan

\_\_\_\_\_

Company Name

Date: \_\_\_\_\_

By: \_\_\_\_\_



# CONTROL OF HAZARDOUS ENERGY (LOCK OUT / TAG OUT) PLAN

## EQUIPMENT LOCKOUT/TAGOUT AUDIT FORM

<b>Machine Name and Number</b>
<b>Number of Energy Sources Machine or Equipment Has</b>
<b>All types of energy sources that machine or equipment is connected to.</b> An energy source can be: electrical, thermal, mechanical, hydraulic, pneumatic, chemical, or gravity.
<b>Method used to disconnect hazardous energy sources</b>
<b>Types of equipment checked to insure disconnections</b>
<b>Additional safety features</b>
<b>Authorized employees for this machine</b>
<b>Affected employees for this machine - Name and how to notify</b>

## APPENDIX B

### LOCK OUT/TAG OUT PROCEDURE

**FOR: SKIDDER**

**FELLER BUNCHER**

**DELIMBER**

#### LOCK OUT/TAG OUT PROCEDURE FOR SKIDDERS

**INTRODUCTION:** You, the operator, or a mechanic, may periodically perform maintenance or repairs on your skidder. While work is in progress, the skidder shall be shut down. All power sources must be turned off and, if possible, severed in order to eliminate the possibility that the skidder will be restarted by someone else or accidentally by yourself, while you or someone else is working on it.

**PURPOSE:** This lock out/tag out procedure establishes the minimum requirements. It shall be used to isolate the skidder from all potentially hazardous energy, and to ensure that the machine is "locked out or tagged out" before anyone performs service or maintenance on it.

**RESPONSIBILITY:** You, as well as all other employees, shall comply with this lock out/tag out procedure. Only authorized employees (the owner of the skidder, equipment or machine, or an authorized mechanic) are authorized to perform lock out/tag out in accordance with this procedure.

- No employee shall attempt to start, energize or otherwise use a skidder, or any other machine or equipment which has been locked out/tagged out. Any employee who uses or attempts to use a machine or equipment which has been locked out/tagged out shall be terminated.
- You shall be instructed in lock out/tag out procedures for the skidder, as well as for machines and equipment which you either operate or upon which you are required to perform maintenance. Neither maintenance nor repairs shall be performed on the skidder or on any machine or equipment that is running.

**SEQUENCE OF LOCK OUT/TAG OUT PROCEDURES:** The following steps shall be performed in the sequence listed when the skidder is to be either locked-out or tagged-out, and each step must be performed by the authorized person performing the lock-out/tag out.

1. Notify all employees who may be potentially affected by the repair or maintenance of the skidder that the skidder shall be shut down and locked out in order to perform the maintenance or repairs.
2. Ground the blade.
3. Set the parking brake.
4. Manipulate the hand and foot controls to dissipate residual energy which may be present in the hydraulic lines.
5. Determine the type and magnitude of the energy that the machine or equipment utilizes. (For example, the skidder has both motorized power and hydraulic power).
6. Identify and locate all devices which isolate energy (e.g., switches, valves, etc.) to the skidder, machine or equipment.

7. Shut down the skidder by following normal operating procedures by turning off the fuel shut off switch.
8. Remove the ignition key, if any, and keep it on your person.
9. Disconnect the battery cables.
10. Turn off the concealed main fuel master cut-off located under the floor board.
11. Lock out and/or tag out (place a lock and/or tag) on each energy isolating device, that is, on the positive battery cable, the ignition switch, if any, the fuel shut-off switch and the master shut-off switch, and the hydraulic controls.
12. The authorized person performing the lock out/tag out shall determine that no personnel are exposed and, after having done so, shall attempt to restart the skidder by following normal operating procedures in order to make certain that it will not operate. After verifying that all energy sources have been isolated, the authorized person shall return all controls to the neutral or "off" position.
13. The skidder is now locked out or tagged out.

**RESTORING MACHINES OR EQUIPMENT TO SERVICE:** The skidder shall be returned to service and the lock out/tag out mechanisms removed only by the same authorized person who placed the lock out/tag out mechanisms. The following steps shall be taken in the order listed:

1. The authorized person who performed the lock out/tag out procedure shall check the area around the skidder to ensure that no one is exposed to any hazard which would be created by reactivating the energy sources to the skidder and restarting it.
2. The authorized person who performed the lock out/tag out of the skidder shall check it to ensure that all components are operationally intact and that non-essential tools and other items have been removed.
3. The authorized person who performed the lock out/tag out of the skidder shall ensure that all guards have been reinstalled to their proper place.
4. The authorized person who performed the lock out/tag out of the skidder shall verify that all controls are in the neutral or "off" position.
5. The authorized person who performed the lock out/tag out of the skidder shall remove the lock out device(s) and/or tag(s) and re-energize the skidder by reconnecting the battery and turning on the ignition switch, if any, and the fuel switches.
6. The skidder is now ready to restart and can be restarted. After completing all of the above-listed procedures, the authorized person who placed and removed the lock out/tag out devices shall notify affected employees that the maintenance or repair of the skidder has been completed and that it is ready for use.

## **LOCK OUT/TAG OUT PROCEDURE FOR THE FELLER BUNCHER**

**INTRODUCTION:** You, the operator, or a mechanic, may periodically perform maintenance or repairs on your feller buncher. While work is in progress, the feller buncher shall be shut down. All power sources must be turned off and, if possible, severed in order to eliminate the possibility that the feller buncher will be restarted by someone else or accidentally by yourself, while you or someone else is working on it.

**PURPOSE:** This lock out/tag out procedure establishes the minimum requirements. It shall be used to isolate the feller buncher from all potentially hazardous energy, and to ensure that the machine is "locked out or tagged out" before anyone performs service or maintenance on it.

**RESPONSIBILITY:** You, as well as all other employees, shall comply with this lock out/tag out procedure. Only authorized employees (the owner of the feller buncher, equipment or machine, or an authorized mechanic) are authorized to perform lock out/tag out in accordance with this procedure.

No employee shall attempt to start, energize or otherwise use the feller buncher, or any other machine or equipment which has been locked out/tagged out. Any employee who uses or attempts to use a machine or equipment which has been locked out/tagged out shall be terminated.

You shall be instructed in lock out/tag out procedures for the feller buncher, as well as for machines and equipment which you either operate or upon which you are required to perform maintenance. Neither maintenance nor repairs shall be performed on the feller buncher or on any machine or equipment that is running.

**SEQUENCE OF LOCK OUT/TAG OUT PROCEDURES:** The following steps shall be performed in the sequence listed when the feller buncher is to be either locked-out or tagged-out, and each step must be performed by the authorized person performing the lock-out/tag out:

1. Notify all employees who may be potentially affected by the repair or maintenance of the feller buncher that the feller buncher shall be shut down and locked out in order to perform the maintenance or repairs.
2. Ground the boom.
3. Set the parking brake.
4. Manipulate the hand and foot controls to dissipate residual energy which may be present with the hydraulic lines.
5. Determine the type and magnitude of the energy that the machine or equipment utilizes. (For example, the feller buncher has both motorized power and hydraulic power).
6. Identify and locate all devices which isolate energy (e.g., switches, valves, etc.) to the feller buncher, machine or equipment.
7. Shut down the feller buncher by following normal operating procedures by turning off the on-off switch.
8. Remove the ignition key, if any, and keep it on your person.
9. Disconnect the battery cables.
10. Turn off the concealed main fuel master cut-off located under the floor board.
11. Place a chock around or adjacent to the cylinder rod to prevent the boom from moving. The boom may collapse if the hydraulic system fails even if the cutting head is grounded.
12. Lock out and/or tag out (place a lock and/or tag) on each energy isolating device, that is, on the positive battery cable, the ignition switch, each fuel cut-off switch and the hydraulic controls.

13. The authorized person performing the lock out/tag out shall determine that no personnel are exposed and, after having done so, shall attempt to restart the feller buncher by following normal operating procedures to make certain that it will not operate. After verifying that all energy sources have been isolated, the authorized person shall return all controls to the neutral or "off" position.

14. Lock the door to the cab and keep the key on your person.

15. The feller buncher is now locked out or tagged out.

**RESTORING MACHINES OR EQUIPMENT TO SERVICE:** The feller buncher shall be returned to service and the lock out/tag out mechanisms removed only by the same authorized person who placed the lock out/tag out mechanisms. The following steps shall be taken in the order listed:

1. The authorized person who performed the lock out/tag out procedure shall check the area around the feller buncher to ensure that no one is exposed to any hazard which would be created by reactivating the energy sources to the feller buncher and restarting it.

2. The authorized person who performed the lock out/tag out of the feller buncher shall check it to ensure that all components are operationally intact and that non-essential tools and other items have been removed.

3. The authorized person who performed the lock out/tag out of the feller buncher shall ensure that all guards have been reinstalled to their proper place.

4. The authorized person who performed the lock out/tag out of the feller buncher shall verify that all controls are in the neutral or "off" position.

5. The authorized person who performed the lock out/tag out procedure shall remove the chock from the cylinder rod.

6. The authorized person who performed the lock out/tag out of the feller buncher shall remove the lock out device(s) and/or tag(s) and re-energize the feller buncher by reconnecting the battery and turning on the fuel switches.

7. The feller buncher is now ready to restart and can be restarted.

After completing all of the above-listed procedures, the authorized person who placed and removed the lock out/tag out devices shall notify affected employees that the maintenance or repair of the feller buncher has been completed and that it is ready for use.



## LOCK OUT/TAG OUT PROCEDURE FOR THE DELIMBER

**INTRODUCTION:** You, the operator, or a mechanic, may periodically perform maintenance or repairs on your delimeter. While work is in progress, the delimeter shall be shut down. All power sources must be turned off and, if possible, severed in order to eliminate the possibility that the delimeter will be restarted by someone else or accidentally by yourself, while you or someone else is working on it.

**PURPOSE:** This lock out/tag out procedure establishes the minimum requirements. It shall be used to isolate the delimeter from all potentially hazardous energy, and to ensure that the machine is "locked out or tagged out" before anyone performs service or maintenance on it.

**RESPONSIBILITY:** You, as well as all other employees, shall comply with this lock out/tag out procedure. Only authorized employees (the owner of the delimeter, equipment or machine, or an authorized mechanic) are authorized to perform lock out/tag out in accordance with this procedure.

No employee shall attempt to start, energize or otherwise use the delimeter, or any other machine or equipment which has been locked out/tagged out. Any employee who uses or attempts to use a machine or equipment which has been locked out/tagged out shall be terminated.

You shall be instructed in lock out/tag out procedures for the delimeter, as well as for machines and equipment which you either operate or upon which you are required to perform maintenance. Neither maintenance nor repairs shall be performed on the delimeter or on any machine or equipment that is running.

**SEQUENCE OF LOCK OUT/TAG OUT PROCEDURES:** The following steps shall be performed in the sequence listed when the delimeter is to be either locked-out or tagged-out, and each step must be performed by the authorized person performing the lock-out/tag out:

1. Notify all employees who may be potentially affected by the repair or maintenance of the delimeter that the delimeter shall be shut down and locked out in order to perform the maintenance or repairs.
2. Ground the boom.
3. Set the parking brake.
4. Manipulate the hand and foot controls to dissipate residual energy which may be present in the hydraulic lines.
5. Determine the type and magnitude of the energy that the machine or equipment utilizes. (For example, the delimeter has both motorized power and hydraulic power).
6. Identify and locate all devices which isolate energy (e.g., switches, valves, etc.) to the delimeter, machine or equipment.
7. Shut down the delimeter by following normal operating procedures by turning off the on-off switch.
8. Remove the ignition key, if any, and keep it on your person.
9. Disconnect the battery cables.
10. Turn off the concealed main fuel master cut-off located under the floor board.
11. Chain or otherwise secure the outer and inner booms together to prevent movement or creeping in the event that the hydraulic system should fail.

12. Lock out and/or tag out (place a lock and/or tag) on each energy isolating device, that is, on the positive battery cable, the ignition switch, each fuel cut-off switch and the hydraulic controls.

13. The authorized person performing the lock out/tag out shall determine that no personnel are exposed and, after having done so, shall attempt to restart the delimeter by following normal operating procedures in order to make certain that it will not operate. After verifying that all energy sources have been isolated, the authorized person shall return all controls to the neutral or "off" position.

14. Lock the door to the cab and keep the key on your person.

15. The delimeter is now locked out or tagged out.

**RESTORING MACHINES OR EQUIPMENT TO SERVICE:** The delimeter shall be returned to service and the lock out/tag out mechanisms removed only by the same authorized person who placed the lock out/tag out mechanisms. The following steps shall be taken in the order listed:

1. The authorized person who performed the lock out/tag out procedure shall check the area around the delimeter to ensure that no one is exposed to any hazard which would be created by reactivating the energy sources to the delimeter and restarting it.

2. The authorized person who performed the lock out/tag out of the delimeter shall check it to ensure that all components are operationally intact and that non-essential tools and other items have been removed.

3. The authorized person who performed the lock out/tag out of the delimeter shall ensure that all guards have been reinstalled to their proper place.

4. The authorized person who performed the lock out/tag out of the delimeter shall verify that all controls are in the neutral or "off" position.

5. The authorized person who performed the lock out/tag out procedure shall remove the chain or other fastener securing the booms.

6. The authorized person who performed the lock out/tag out of the delimeter shall remove the lock out device(s) and/or tag(s) and re-energize the delimeter by reconnecting the battery and turning on the fuel switches.

7. The delimeter is now ready to restart and can be restarted.

After completing all of the above-listed procedures, the authorized person who placed and removed the lock out/tag out devices shall notify affected employees that the maintenance or repair of the delimeter has been completed and that it is ready for use.