

# Standard Operating Procedure (SOP)

## Safe Machinery Operation and Lockout/Tagout (LOTO) Protocols

This SOP details **safe machinery operation and lockout/tagout (LOTO) protocols** to prevent accidental machine startup and ensure worker safety during maintenance and repairs. It covers proper machine use, identification of hazardous energy sources, procedures for effective lockout/tagout implementation, employee training requirements, and steps for verifying equipment isolation. Adherence to these protocols minimizes risks of injuries and equipment damage by controlling hazardous energy release.

### 1. Purpose

To ensure the safe operation, maintenance, and servicing of machinery by preventing unintended equipment startup and controlling hazardous energy through proper lockout/tagout procedures.

### 2. Scope

This SOP applies to all employees involved in operating, maintaining, or servicing machinery where unexpected energization or release of stored energy could cause harm.

### 3. Responsibilities

- **Supervisors:** Ensure enforcement of LOTO protocols and employee training.
- **Authorized Employees:** Implement LOTO procedures during tasks involving hazardous energy.
- **All Employees:** Follow safe machinery operation protocols and report any unsafe conditions.

### 4. Definitions

- **Lockout/Tagout (LOTO):** The practice of disabling machinery or equipment and affixing locks and tags to prevent accidental energization.
- **Authorized Employee:** A person trained and designated to perform LOTO on machines/equipment.
- **Affected Employee:** An employee who operates or works near equipment subject to LOTO.
- **Hazardous Energy:** Electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy sources that can harm personnel.

### 5. Safe Machinery Operation

1. Operate machines strictly per manufacturer and company guidelines.
2. Wear designated personal protective equipment (PPE) at all times.
3. Inspect equipment for defects or signs of abnormal operation before use.
4. Report and do not operate defective equipment.

### 6. Identification of Hazardous Energy Sources

1. Identify all energy sources for each piece of equipment (e.g., electrical, pneumatic, hydraulic, gravity, mechanical, chemical).
2. Reference equipment manuals and diagrams for accurate identification.
3. Document all energy isolating devices in the equipment inventory.

### 7. LOTO Procedures

1. Notify all affected employees of the planned shutdown and maintenance/repair activity.
2. Shut down the equipment using normal operating procedures.
3. Isolate all energy sources using the appropriate energy isolation devices (switches, valves, breakers, etc.).
4. Lock out and tag each energy isolation device using assigned, durable lockout devices and tags indicating the responsible employee.
5. Release or safely restrain all stored/residual energy (e.g., bleed air, discharge capacitors, relieve pressure).
6. Verify the isolation by attempting to restart the equipment or using appropriate testing equipment. **Do not attempt restart with others near equipment.**
7. Perform maintenance or servicing work only when all energy sources are confirmed isolated and locked out.
8. Upon completion, inspect the area to ensure it is clear of tools and personnel before restoring energy.
9. Remove LOTO devices only by the employee who applied them. Notify affected personnel prior to re-energizing.
10. Restore equipment to normal operation following manufacturer's instructions.

### 8. Employee Training Requirements

- All authorized and affected employees must receive initial and periodic refresher training on LOTO procedures.
- Training must cover proper use of LOTO devices, hazardous energy recognition, and emergency response actions.
- Maintain training records for all applicable employees.

## 9. Verification of Equipment Isolation

1. After LOTO devices are applied, attempt to operate controls or use test instruments to confirm energy isolation.
2. Re-verify after any work interruptions or personnel changes.
3. Document successful verification as per company policy.

## 10. Documentation and Recordkeeping

- Maintain logs of all LOTO events, including date, equipment, personnel involved, and completion status.
- Keep records of inspections, maintenance, and employee training on file for regulatory compliance.

## 11. Review and Auditing

- Review and update this SOP annually or when equipment/process/procedural changes occur.
- Conduct periodic audits to ensure LOTO protocol compliance.

**Note:** Failure to comply with LOTO procedures may result in disciplinary action and/or serious injury.