

## Lockout/Tagout Procedure for Electrical Work – 29 CFR 1910.333(b)

This appendix may be used as the lockout/tagout procedure for work involving electrical hazards conducted by trained and qualified electrical workers who install, maintain, repair, and/or replace premise electrical wiring systems. Departments and units must make this procedure available to all trained and qualified electrical workers if using these procedures in lieu of specific written lockout/tagout procedures.

### **1910.333(b)** "Working on or near exposed deenergized parts."

**1910.333(b)(1)** "Application." This paragraph applies to work on exposed deenergized parts or near enough to them to expose the employee to any electrical hazard they present. Conductors and parts of electric equipment that have been deenergized but have not been locked out or tagged in accordance with paragraph (b) of this section shall be treated as energized parts, and paragraph (c) of this section applies to work on or near them.

**1910.333(b)(2)** "Lockout and Tagging." While any employee is exposed to contact with parts of fixed electric equipment or circuits which have been deenergized, the circuits energizing the parts shall be locked out or tagged or both in accordance with the requirements of this paragraph. The requirements shall be followed in the order in which they are presented (i.e., paragraph (b)(2)(i) first, then paragraph (b)(2)(ii), etc.). Note 1: As used in this section, fixed equipment refers to equipment fastened in place or connected by permanent wiring methods. Note 2: Lockout and tagging procedures that comply with paragraphs (c) through (f) of 1910.147 will also be deemed to comply with paragraph (b)(2) of this section provided that: [1] The procedures address the electrical safety hazards covered by this Subpart; and [2] The procedures also incorporate the requirements of paragraphs (b)(2)(iii)(D) and (b)(2)(iv)(B) of this section.

**1910.333(b)(2)(i)** "Procedures." The employer shall maintain a written copy of the procedures outlined in paragraph (b)(2) and shall make it available for inspection by employees and by the Assistant Secretary of Labor and his or her authorized representatives. Note: The written procedures may be in the form of a copy of paragraph (b) of this section.

### **1910.333(b)(2)(ii)** "Deenergizing equipment."

**1910.333(b)(2)(ii)(A)** Safe procedures for deenergizing circuits and equipment shall be determined before circuits or equipment are deenergized.

**1910.333(b)(2)(ii)(B)** 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.

**1910.333(b)(2)(ii)(C)** 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.

**1910.333(b)(2)(ii)(D)** 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)(iii)** "Application of locks and tags."

**1910.333(b)(2)(iii)(A)** A lock and a tag shall be placed on each disconnecting means used to deenergize circuits and equipment on which work is to be performed, except as provided in paragraphs (b)(2)(iii)(C) and (b)(2)(iii)(E) of this section. The lock shall be attached so as to prevent persons from operating the disconnecting means unless they resort to undue force or the use of tools.

**1910.333(b)(2)(iii)(B)** Each tag shall contain a statement prohibiting unauthorized operation of the disconnecting means and removal of the tag.

**1910.333(b)(2)(iii)(C)** If a lock cannot be applied, or if the employer can demonstrate that tagging procedures will provide a level of safety equivalent to that obtained by the use of a lock, a tag may be used without a lock.

**1910.333(b)(2)(iii)(D)** A tag used without a lock, as permitted by paragraph (b)(2)(iii)(C) of this section, shall be supplemented by at least one additional safety measure that provides a level of safety equivalent to that

obtained by use of a lock. Examples of additional safety measures include the removal of an isolating circuit element, blocking of a controlling switch, or opening of an extra disconnecting device.

**1910.333(b)(2)(iii)(E)** A lock may be placed without a tag only under the following conditions:

**1910.333(b)(2)(iii)(E)(1)** Only one circuit or piece of equipment is deenergized, and

**1910.333(b)(2)(iii)(E)(2)** The lockout period does not extend beyond the work shift, and

**1910.333(b)(2)(iii)(E)(3)** Employees exposed to the hazards associated with reenergizing the circuit or equipment are familiar with this procedure.

**1910.333(b)(2)(iv)** Verification of deenergized condition. The requirements of this paragraph shall be met before any circuits or equipment can be considered and worked as deenergized.

**1910.333(b)(2)(iv)(A)** A qualified person shall operate the equipment operating controls or otherwise verify that the equipment cannot be restarted.

**1910.333(b)(2)(iv)(B)** A qualified person shall use test equipment to test the circuit elements and electrical parts of equipment to which employees will be exposed and shall verify that the circuit elements and equipment parts are deenergized. The test shall also determine if any energized condition exists as a result of inadvertently induced voltage or unrelated voltage backfeed even though specific parts of the circuit have been deenergized and presumed to be safe. If the circuit to be tested is over 600 volts, nominal, the test equipment shall be checked for proper operation immediately after this test.

**1910.333(b)(2)(v)** "Reenergizing equipment." These requirements shall be met, in the order given, before circuits or equipment are reenergized, even temporarily.

**1910.333(b)(2)(v)(A)** A qualified person shall conduct tests and visual inspections, as necessary, to verify that all tools, electrical jumpers, shorts, grounds, and other such devices have been removed, so that the circuits and equipment can be safely energized.

**1910.333(b)(2)(v)(B)** Employees exposed to the hazards associated with reenergizing the circuit or equipment shall be warned to stay clear of circuits and equipment.

**1910.333(b)(2)(v)(C)** Each lock and tag shall be removed by the employee who applied it or under his or her direct supervision. However, if this employee is absent from the workplace, then the lock or tag may be removed by a qualified person designated to perform this task provided that:

**1910.333(b)(2)(v)(C)(1)** The employer ensures that the employee who applied the lock or tag is not available at the workplace, and

**1910.333(b)(2)(v)(C)(2)** The employer ensures that the employee is aware that the lock or tag has been removed before he or she resumes work at that workplace.

**1910.333(b)(2)(v)(D)** There shall be a visual determination that all employees are clear of the circuits and equipment.