

Stored Energy After the Lock

About 9 minutes to deliver

Locking the switch is step one of many. Springs, hydraulics, capacitors, steam and gravity do not care that the power is off.

Most people learn lockout as "lock the switch, put your name on it." That is one step of a procedure, and the step that kills people comes after it.

1910.147(d)(5)(i): following the application of the lock, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, or otherwise rendered safe.

WHAT IS STILL IN THERE AFTER THE POWER IS OFF

- Gravity. A raised platform, ram, blade, bucket, bed, counterweight or elevator. Block it, crib it, or bring it down.
- Springs. Under compression or tension in presses, clamps, doors, tensioners, brakes and valve actuators. Springs release instantly and are frequently invisible inside a housing.
- Hydraulic and pneumatic pressure. Bleed to zero and verify on a gauge, not by looking at the machine.
- Capacitors. Drives, power supplies, welders, large motors. They hold a lethal charge after the disconnect opens, sometimes for minutes.
- Rotational inertia. Flywheels, fans, saw blades and centrifuges coast for a long time. A guard is not a brake.
- Thermal. Steam, hot oil, hot metal, hot process fluid.
- Chemical and process. A line that can backfeed from another part of the system. Blank or blind it — a closed valve is not an isolation.

TRY, THEN VERIFY

The step everybody knows and nobody does.

- Try to start it. Push the button, operate the control, at every operating station. Then return the control to off.
- Verify with a meter for electrical work — and test the meter on a known live source first, then the circuit, then the known source again. A meter that has quietly died reads zero on everything.
- Verify each energy type separately. Electrical zero says nothing about the hydraulic accumulator.
- If there is any chance stored energy re-accumulates, 1910.147(d)(5)(ii) says verification continues until the work is done. A leaking valve refills an accumulator while you are inside the machine.

THE LOCKS

- One lock per person, on the person. Your lock, your key, in your pocket. Nobody's lock comes off for them.
- Group work means a group lockbox and every person's lock on it.
- A shift change is not a reason to remove a lock — the incoming person's lock goes on before the outgoing person's comes off.
- Removing somebody else's lock is a formal procedure with a supervisor, a documented attempt to reach them, and telling them before they restart work. It is never a bolt cutter and a shrug.

ASK THE CREW

- On the machines we lock out here, what stored energy is in them besides electrical?
- Does everyone do the try step, or does it get skipped?
- Has anyone ever found somebody else's lock still on and wondered whether to cut it?

29 CFR 1910.147 · 29 CFR 1910.333

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ATTENDANCE RECORD

Stored Energy After the Lock

About 9 minutes to deliver · 29 CFR 1910.147 · 29 CFR 1910.333

Date

Job / site

Delivered by

Company

#	Print name	Signature	Date
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I delivered this talk and determined it was suitable for this crew and this work.

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