



Isolation/Lock-off Overview

Purpose of Isolation/Lock-off

Isolation/lock-off is used to **prevent the unexpected startup or activation of a machine or equipment during service and/or maintenance operations that might cause injury.** In short: isolation/lock-off makes certain that no one performing service or maintenance work gets injured or killed.

Energy Sources

When isolation/lock-off is performed, it is important to identify all energy sources inside a machine or piece of equipment. **This is not limited to electrical energy**, the most common source; it also must include mechanical energy, pneumatic energy, hydraulic energy, stored energy (particularly when dealing with pneumatic or hydraulic energy) and thermal energy. Consider the impact gravity will have on equipment released from its energy source and take the steps to prevent equipment or parts from falling.

When isolation/lock-off is Used

Lock-off is used during all service or maintenance when an employee must **remove or bypass machine safeguards and have body parts exposed** to the point of operation or another danger zone. Isolation/lock-off guards against the **unexpected** energising or startup of the equipment during all service activities. **This include installing, adjusting, setting up, inspecting, modifying, or servicing machines or equipment in addition to lubricating, cleaning, un-jamming and making adjustments or tool changes.**

When isolation/lock-off is Not Necessary

Lock-off is not necessary during **normal production operations provided no guards are removed and employees are not placing any part of their body in a danger zone.** Normal production operations are defined as the machine performing its intended function.

Work Zones

When service or maintenance work is being performed on live electrical systems, the electrician will establish a work zone around the work. **This work zone will be identifiable with safety cones and is off limits to other employees.**

Written Procedure

The company has a written isolation/lock-off programme that outlines how the programme will be administered. In addition, there are written “machine specific procedures” that define how each machine or piece of equipment will be de-energised. Those who perform service or maintenance work should follow these step-by-step procedures to make sure all energy sources are eliminated before work is performed inside the machine.





Steps to Initiate Isolation/lock-off When authorised employees need to lock-off equipment, they will follow these exact steps to systematically de-energise a machine or piece of equipment before doing work:

1. Notify employees in the immediate area that service/maintenance work will be performed on a particular machine or equipment.
2. Identify all energy control points and necessary equipment for lock-off. Refer to the machine's specific procedures.
3. Conduct an orderly shutdown of equipment.
4. Deactivate energy control device(s) from energy source(s).
5. Lock-off all the energy control devices with a padlock.
6. Dissipate or restrain stored energy through blocking, bleeding, earthing, etc.
7. Verify isolation from energy by attempting to start/operate the machine. This is a very important step and should never be overlooked.
8. Return all energy controls and/or buttons to neutral/off position.

Once these steps are complete, the machine is de-energised and the authorised employee can perform the assigned service or maintenance work.

Isolation vs. lock-off

There may be times when a padlock cannot be used on an energy control device because there is no place to put the lock. **In that case, a tag like this will be used.**



Whenever you see this tag, **DO NOT** attempt to use the switch or try to operate the equipment. If you do, you could hurt or kill the person working on the equipment.

Summary

Whenever machine safeguards are removed or bypassed and an authorised employee must place his or her hands, or any other body part, in a danger zone to perform service work, the piece of equipment being serviced must be locked out.

When a padlock or a tag is on an energy control device, leave the control device alone and do not attempt to re-energise the machine. An authorised person is working on the machine and if it starts up unexpectedly, that individual may get injured or killed.

Finally, when electricians are working on live electrical equipment, they will set up a work zone with safety barriers. When that work zone is established, only authorised personnel may enter – everyone else needs to stay clear of that area for their own protection.

