



TOOLBOX TALKS

LOCK OUT TAG OUT

Lock Out Tag Out (LOTO) is a critical component of employee safety and workplace productivity. It is essential to safeguarding workers and employees around the machinery and equipment they operate, service and maintain.

As the PCBU, you must have a safe and effective lockout procedure and you must make sure your workers are trained in the procedure or are supervised when they carry out the procedure.

LOCK OUT

Physically ensuring equipment is inoperable while repairs or adjustments are made with the use of a padlock and a suitable device.

TAG OUT

Clearly communicating to workers with labels and tags that the equipment is being serviced, should not be operated and when it will return to service.

Lock out, tag out (LOTO) is a safety procedure used to ensure that dangerous equipment is properly shut off and not able to be started up again prior to the completion of maintenance or repair work. It requires that hazardous energy sources be "isolated and rendered inoperative" before work is started on the equipment in question.

The isolated power sources are then locked, and a tag is placed on the lock identifying the worker and reason the LOTO is placed on it. The worker then holds the key for the lock, ensuring that only they can remove the lock and start the equipment. This prevents accidental start-up of equipment while it is in a hazardous state or while a worker is in direct contact with it.

ISOLATING MACHINERY FROM ITS ENERGY SOURCE

For a lockout to be safe and effective, and prevent the machinery making any unplanned movements that could cause harm, it is critical to:

- shut down (isolate) all energy sources to the machinery, and
- release (de-energise) all stored energy within the machinery.

Machinery may use one or more energy sources, including:

- mains electricity
- batteries or capacitor banks
- solar panels
- compressed air
- fuel
- heat
- steam
- fluids or gases under pressure, such as water or hydraulic oil
- stored energy, such as compressed springs or hydraulic rams
- gravity (for example, suspended weights)
- radiation
- chemicals.

LOCKOUT AND TAGOUT PROCESS STEPS

1. Identify the machinery to be locked out and the type of energy to be controlled

- Review your lockout procedure.

2. Assess the risks, including the consequences of locking out the machinery

- For example, make sure that shutting off the machinery will not cause harm to other people.

3. Notify all affected workers that the machinery will be locked out

4. Shut down the machinery following established procedures

- Make sure all moving parts have stopped.
- Where machinery takes some time to stop, workers must not enter the lockout area unless a safe entry system is in place.

5. Identify and de-energise the lockout point for each energy source

For example:

- disconnect electrical power to the pump or compressor
- close the valve feeding the cylinder
- lower or support elevated equipment
- release compressed air or hydraulic pressure
- drain fluids
- check that all hydraulic accumulators, blowdown bottles and receivers are secure
- use effective safety pins or load-holding devices to prevent gravity fall.

6. Each worker should attach their personal lock to the lockout point for each energy source

Check that the area around the machinery is clear of other people.

- Select your lockout device (for example, chains, locks, adapters, safety stop pins).
- Lock all energy sources in the 'off' position with your lockout device. This should hold the controls in a safe position to achieve a state of zero energy.
- Lock all other controls that could activate or cause the machinery to restart, including backup energy sources such as generators.

Do not use programmable logic controllers (PLCs), key lockable emergency stops or similar selector switches as the only method of isolation and lockout.

7. Tag out the machinery

- Attach a tag to the machinery warning other workers that it is locked out.
- If the machinery is faulty or damaged, attach an 'Out of service' tag to it.
- Tags should have the name of the person who locked out the machinery, the date and time, and the reason for isolation written on them.
- If more than one worker is locking out the machinery, each should attach a tag to their personal lock, and then attach the lock to the lock box.
- Each worker's name and contact details should be written on an isolation register, a permit to work record, an isolation tag or a physical lock.

8. Test the lockout to make sure it works and that each energy source is locked out

- Check that the area around the machinery is clear of other people and that no hazard will be created if the lockout does not work.
- Press all start buttons (the machinery should not start).
- Where applicable, operate all functions to release any stored energy and to check for unknown backup systems.
- Make sure that any pressure sensor, thermostat, switches, PLCs and computer-controlled systems or other automatic systems cannot restart the machinery.

You must also:

- Make sure all workers who lock out and tag out machinery are trained in the correct procedure.
- Supervise workers to make sure they follow correct procedure and use them every time they do a lockout and tagout.

It is good practice to:

- Monitor and review your lockout procedure to make sure it remains effective.
- Write down your lockout procedure and give a copy to your workers or have a copy on or by the machinery.

CUSTOM KEYING OPTIONS

Depending on the nature of the LOTO system being used there are many custom keying options and the ability to key alike, master key and grandmaster key.

A master key opens all locks in the system, even though each lock has its own individual key. This system permits organising submaster, master and grandmaster systems along departmental or other functional lines. Master keys can also be made to fit multiple groups of Keyed Alike locks. It is the contractor responsibility to ensure the correct type of LOTO system is being used.

LOTO TRAINING

There are numerous Health and Safety training providers that run LOTO training courses.

9. LOCK OUT AND TAG OUT PROCESS STEPS CHECKLIST

1. Identify the machinery to be locked out and the type of energy to be controlled
2. Assess the risks, including the consequences of locking out the machinery
3. Notify all affected workers that the machinery will be locked out
4. Shut down the machinery following established procedures
5. Identify and de-energise the lockout point for each energy source
6. Each worker should attach their personal lock to the lockout point for each energy source
7. Tag out the machinery
8. Test the lockout to make sure it works and that each energy source is locked out

THE FOLLOWING STANDARDS CAN BE REFERRED TO FOR SAFE GUIDELINES:

AS/NZS 4836:2011 – Safe working on or near low-voltage electrical installations and equipment. This Standard provides a framework around isolation of potential energy sources and elimination of potential hazards.

AS 4024.1603-2016 – Safety of machinery – Design of controls, interlocks, and guards- Prevention of unexpected start-up. This Standard details the requirements for “Prevention of unexpected start-up” of equipment.

AS/NZS 3017:2022 – Electrical installations – Verification inspection and testing – section 4.3.5 "confirming isolation".