



SAFETY ALERT

Proper Lock-Out/Tag-Out Procedure

1. **P** PROCESS SHUTDOWN
2. **R** RECOGNIZE ENERGY TYPE
3. **O** OFF - SHUT OFF ISOLATING DEVICES
4. **P** PLACE LOCK AND TAG
5. **E** ENERGY RELEASE STORED ENERGY (0 ENERGY STATE)
6. **R** RECHECK CONTROLS AND RETURN TO PROPER SETTING

ENERGY TYPES

Recognize The Types of Energy To Shut Down

1. Electrical Energy
2. Hydraulic and/or Pneumatic Energy
3. Fluids and Gases
4. Mechanical Energy

ACCIDENT SITUATIONS

- Accident Start Up
Equipment can accidentally be turned on and your hands may be in the point of operation or while you are inside.
- Electrical Shock
You can be accidentally electrocuted if the power is still on or if it is accidentally turned on.
- Hazardous Materials
If released can go into confined areas or the work area.
- Stored Energy
You could be caught in equipment that can move due to stored energy, even with the power off.

The Solution Is Quite Simple — These Accidents Can Be Prevented Using The P-R-O-P-E-R Lock-Out Procedures.

LOCK RULES

1. Use an appropriate “Lock-Out Device”, such as Lock Tongs, or a Lock Tag. Each person must attach his or her own lock to the Lock-Out Device.
2. Identify Locks
Each lock will be identified by a number or a name. A lock without a tag is not good enough. Additional information that identifies the person / persons doing the work must be on the tag. Also the type of work that is being performed should be on the tag.
3. Sign The Tag
In some instances one tag is enough, however, the tag must be signed by each worker. In some circumstances a supervisor will also need to sign the tag.
4. One Key Per Lock
5. Never give your key to anyone else.

Recheck controls and return to proper setting

P-R-O-P-E-R ELECTRICAL LOCK-OUT

P Process Shut Down

Open disconnect before pulling the plug. Shut down process or equipment.

R Recognize Energy Type

Recognize the correct power source.

O Off! -Shut Off all Power Controls

Shut off machine and electrical energy at both machine and main power switch. There may be more than one source of power and all must be shut off. If necessary, electrical drawings and a supervisor may need to be involved.

P Place Lock-Out Device, Lock and Tag

Each person working on equipment needs to put his or her lock on the switches and sign the tag.

E Energy - Release Stored Energy

Bleed electrical capacitors if any.

R Recheck Controls and Return To “OFF” Setting

Recheck the start button and properly test that you have zero energy state.

P-R-O-P-E-R HYDRAULIC AND/OR PNEUMATIC LOCK-OUT

P Process Shut Down

Shut down process using recommended procedures.

R Recognize Energy Type

Recognize all sources of energy – the electric that powers the pumps or compressors, and the air or hydraulic valves themselves.

O Off! -Shut Off all Power Controls

Shut off each energy type.

P Place Lock-Out Device, Lock and Tag

The shape or location on some valves may be difficult to lock out. If there is not a specific lock out tag out procedure in place you should ask your supervisor.

E Energy - Release Stored Energy

Bleed the stored energy by bleeding the air line and draining the compressor, or by using other prescribed methods. Keep in mind that when bleeding stored energy it could cause some parts of the equipment to move, as it is being held by the stored energy.

R Recheck Controls and Return To “OFF” Setting

Return controls to proper settings.

P-R-O-P-E-R FLUIDS AND GASES LOCK-OUT

P Process Shut Down

Shut down process using recommended procedures.

continued on back

R Recognize Energy Type

Recognize the material and its hazards. If material is hazardous, use the proper protective equipment. Even water can become a hazardous fluid under high pressure.

O Off! -Shut Off all Isolating Valves

If a job requires breaking in to a line close off isolating device, blanking if necessary. Some valves may be difficult to lock out. A locking bar or chains may be needed. Check with supervisor.

P Place Lock-Out Device, Lock and Tag

Sign tag.

E Energy - Release Stored Energy

Release pressure and drain to achieve zero energy state.

R Recheck Controls and Return "OFF" Setting

Recheck line and test properly and make sure you have zero energy state.

P-R-O-P-E-R MECHANICAL ENERGY LOCK-OUT

Mechanical Energy may be released at the point of operation, or where two or more points of operation come together. This is where you might get caught. In most cases blocking mechanical energy is done in addition to shutting off the primary source, such as electrical, hydraulic and pneumatic. Some examples include inserting restraining pins or bars in the point of operation or block under a lift.

In cases where these blocks to mechanical energy are not locked in place, they should not be the primary means of shutting off energy. Mechanical energy can also be stored.

1 Gravity

Things that are up can fall of their own weight. Pins or blocking may be required.

2 Springs

BOING! can spell DEATH. Release tension or compressed springs by using methods prescribed by the equipment manufacturer.

3 Tension

Things under tension can spring in. Release tension by using prescribed method by equipment manufacturer.

P Process Shut Down

Shut down the process.

R Recognize Energy Type

Recognize all forms of energy – Need to be shut off, such as electrical and mechanical. Mechanical is usually a secondary energy source closest to point of operation.

O Off! -Shut Off all Power Controls

Such as switches, valves and other isolating devices.

P Place Lock-Out Device, Lock and Tag

Place lock on the isolating device and sign tag.

E Energy - Release Stored Energy

Release, spring or tension to achieve, zero energy state.

R Recheck Controls and Return To "OFF" Setting

Starting the equipment is just as important as Lock-Out /Tag-Out in terms of safety.

Start-up

- Inspection
- Clean up
- Replace guards
- Check controls
- Remove locks
- Visual checks

Inspect

When work is finished the equipment must be inspected for proper adjustment before starting equipment.

Clean Up

All materials and debris must be cleaned up. Any combustible materials and old parts used during repairs must be cleaned up.

Replace Guards

Replace all guards to the equipment. If adjustments can not be made with the guard on after start-up, leave off only the ones to be adjusted after start-up.

Check Controls

Make sure all switches are in the off position. In some cases the machine can start automatically when energy is restored.

Remove Locks

Each person must remove his or her own lock or tag. This will ensure you are in a safe place when the equipment is started.

Visual Checks

If the equipment is too large to see all around it, station personnel around the area and sound the personnel alarm before starting the equipment.

If your operation is more complex, having many pieces of equipment and a lot of people, a comprehensive Lock-Out/Tag-Out procedure may involve additional steps. You will need to ask your supervisor about these procedures. A specific lock out procedure may be posted at each machine. On larger or long term maintenance projects or installation projects, the procedures should be explained to all participants and a copy of the procedures posted on site for the duration of the work. Provisions which ensure protection during shift changes when contractor or outside help is used also need to follow the Lock-Out/Tag-Out procedures. Comprehensive Lock-Out/Tag-Out may use a gang box or other system to ensure that locks are secure and not removed without authorization.

Remember Lock-Out Tag-Out procedures work because you are the only one with the key to your lock.

Proper Lock-Out/Tag-Out can save lives, limbs and money. Help make your work environment safe for yourself and your fellow employees. Make sure you follow the P-R-O-P-E-R Lock-Out/Tag-Out procedures, and that those around you do also.

YOUR LIFE MAY DEPEND ON IT.

ZERO ENERGY START UP

Zero Energy State to Start-up to Operating State