

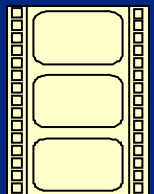


Nov IEEE 2016

LOTO

LockOut TagOut

Global Practice



OSHC, Occupational Safety and Health Center - Facts



REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF LABOR AND EMPLOYMENT

OCCUPATIONAL SAFETY AND HEALTH CENTER

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Fact Finding Survey on Electrical Safety

Abstract

The survey on electrical safety covered 26 manufacturing establishments. Prevailing working conditions were noted to gather baseline information concerning electrical installations, equipment and work practices. Results of the survey revealed factors which may cause electrical accidents. The more common unsafe conditions include irregular wires, replacement of burnt out fuses with wires, unprotected and not elevated electric wires, and poor guarding of exposed current carrying parts. Unsafe acts noted were the lack of training of electrical personnel as to the use of tags and locks during repair or maintenance works on de-energized equipment and circuits and the non-use of proper personal protective equipment.

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E-mail: oshcenter@oshc.dole.gov.ph

OSHA , Occupational Safety and Health Administration - Facts



The OSHA standard for *The Control of Hazardous Energy (Lockout/Tagout)*, Title 29 Code of Federal Regulations (CFR)

Part 1910.147, addresses the practices and procedures necessary to disable machinery or equipment, thereby preventing the release of hazardous energy while employees perform servicing and maintenance activities. The

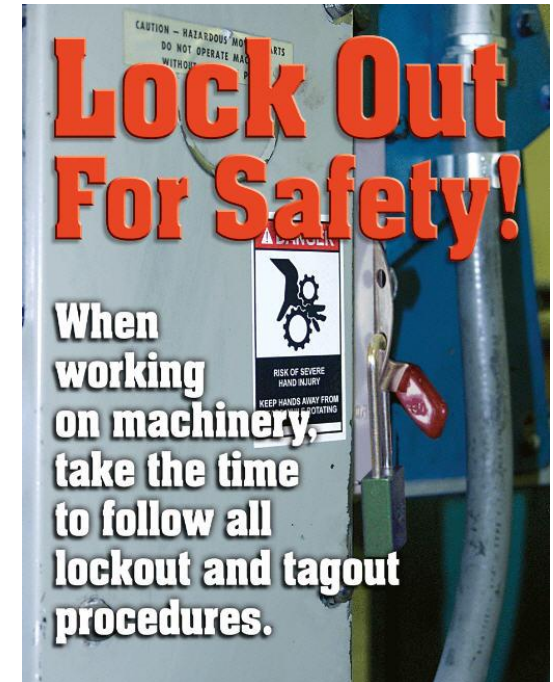
greatest risk. Compliance with the lockout/tagout standard prevents an estimated 120 fatalities and 50,000 injuries each year. Workers injured on the job from exposure to hazardous energy lose an average of 24 workdays for recuperation.

In addition, 29 CFR 1910.333 sets forth requirements to protect employees working on electric circuits and equipment. This section requires workers to use safe work practices, including lockout and tagging procedures. These

The lockout/tagout standard establishes the employer's responsibility to protect employees from hazardous energy sources on machines and equipment during service and maintenance.

Common Causes of Accidents in factory - Fact

1. Failure to STOP equipment
2. Failure to Disconnect power source
3. Failure to Dissipate residual energy
4. Accidental Restarting of equipment
5. Failure to Clear work access before activation



Common Excuses/Statements

We are not trained to use it

I'm using PPE's

Magpapalit lang tayo ng breaker

yung mura ang bilhin natin

As simple job as changing the breaker

No budget



for the past 25yrs I'm not using any LOTO

Simple lang yung gagawin

Mag ingat na lang tayo

Pam patagal ng trabaho

Simple job/process

We just be Caution

 WHEN PERFORMANCE MATTERS MOST™

Time consuming process

Safety Hierarchy Control

Elimination

Options to get rid of the risk altogether

Substitution

Replace the Hazard with a less hazardous

Engineering control

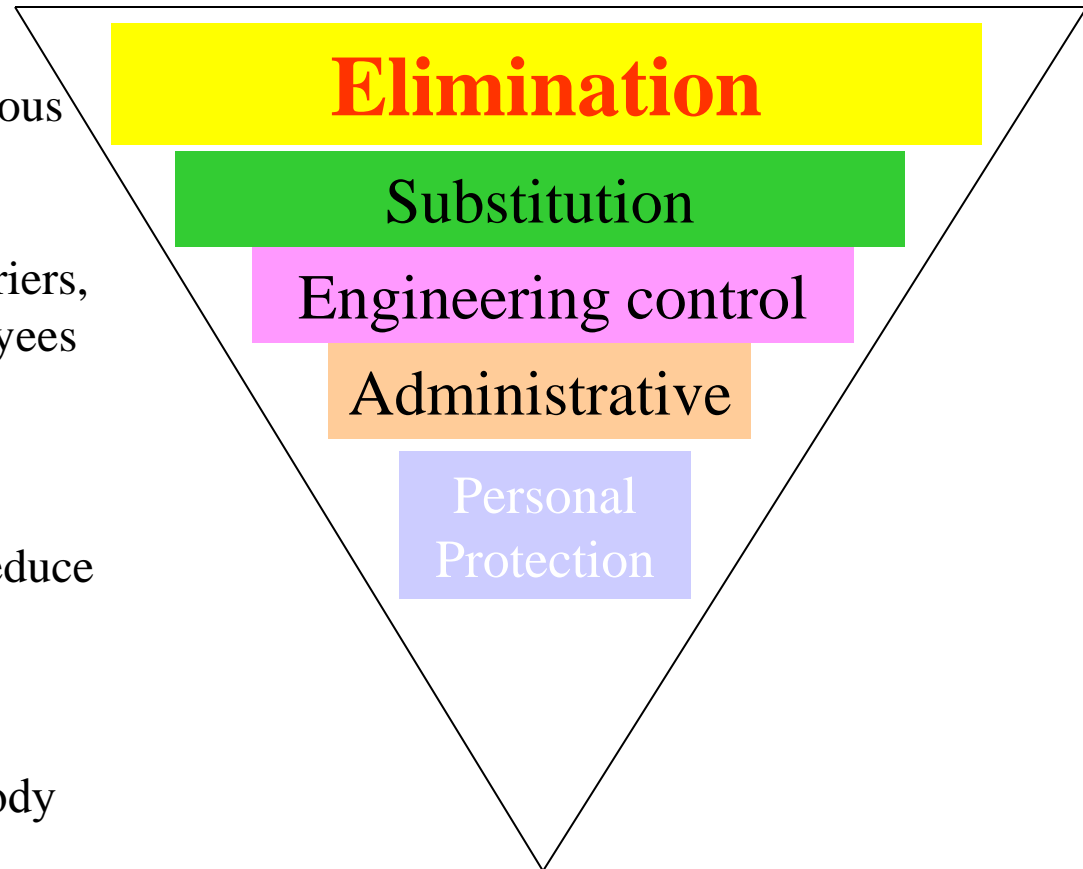
The provision of mechanical aids, barriers, guards to isolate a hazard from employees

Administrative

Establishing information, policy, procedures and work instructions to reduce risk to the workers

Personal Protection

Covering and protecting a worker's body from the hazards



Overview

What is Lockout/Tagout (LOTO)?

LOTO is the process of preventing the flow of Hazardous energy from a supply source to a piece of equipment/machine and in doing so, prevent it from operating.

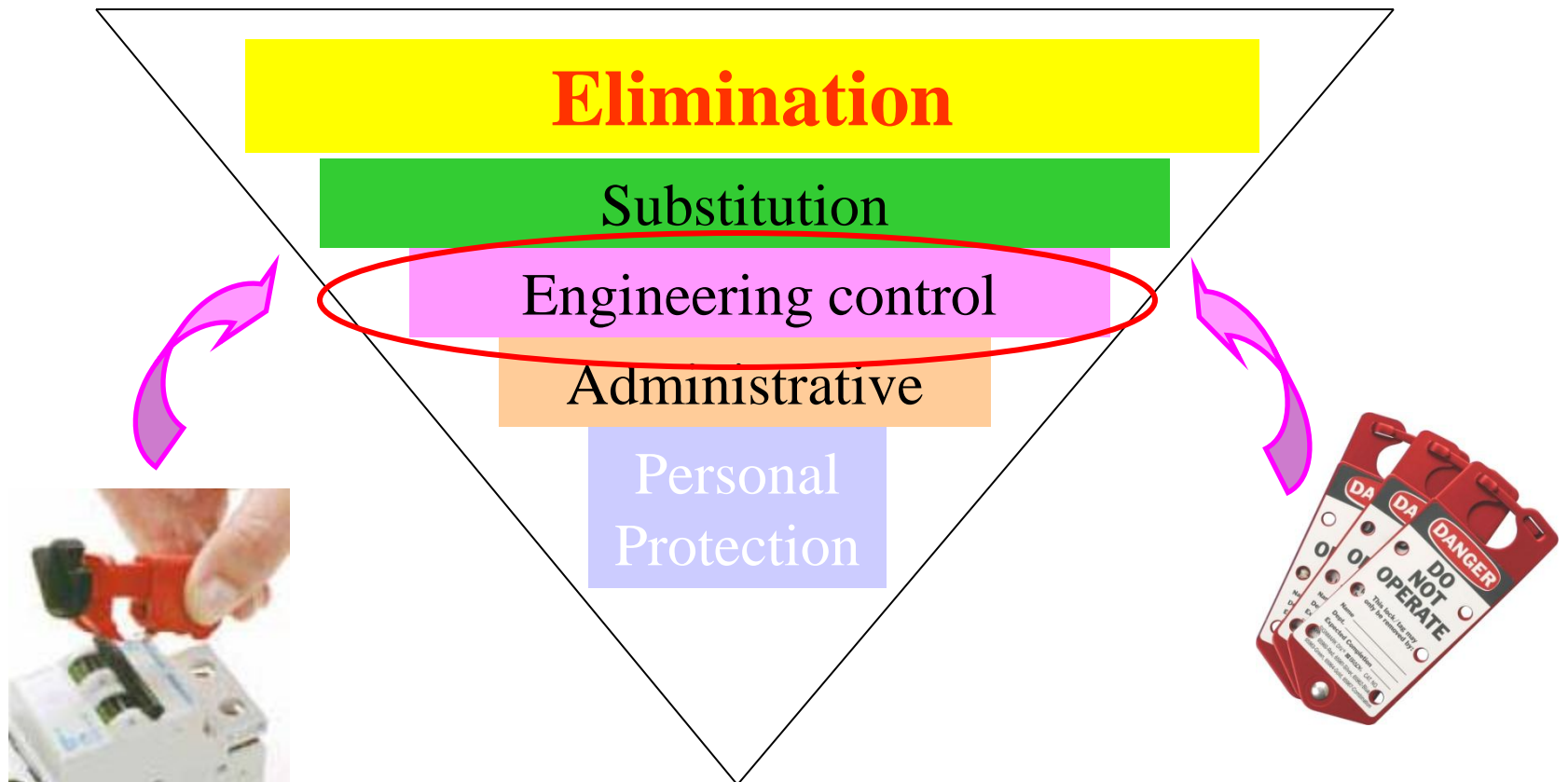
This will protect the workers involved in the maintenance and servicing of equipment from the dangerous effects of hazardous energy.



Hierarchy Control

Engineering control

The provision of mechanical aids, barriers, guards to isolate a hazard from employees



Types of potential hazardous Energies

Hazardous energies are those can endanger the live of workers during servicing and maintenance of machines and equipments , unexpected startup which can result in serious injury or death.

- Electrical
- Pneumatic
- Hydraulic
- Thermal
- Chemical
- Gravitational



Advantages/Benefit with Safety Compliance

- Accident prevention
 - Injuries and Death
- Medical Cost
 - Hospitalisation and Compensation
- Breakdown
 - Damage and Repair
- Manhour/Production Time Lost
 - Non Productive and Idling time





Iceberg Effect Accidents Cost Money



What need to be done?

Establish Safety Standard for employees exposed to hazardous energy need to follow

- Develop, Implement and Enforce Energy control program
- Ensure New or Overhauled equipment is capable of being LO
- Develop, Implement and Enforce Effective TO program if machines or equipment cannot be LO
- Develop, document, implement and Enforce control Procedures
- Use **Proper, Safety Comply LOTO devices** for particular equipment and machineries
- Use **Durable, Standardised and Substantial** devices
- LOTO devices should be able to be **identifiable to individual** implementing it.
- Established policy that permits only employee who applied is to remove it
- Provide Effective mandatory training
- Review procedures annually

How do you develop LOTO system?

- Understand the process.
 - Work with Operation and Maintenance Team
 - Refer to Operation and Maintenance Manual
- Do a risk assessment.
 - How could worker get contact with it ?
 - What is the level of seriousness ?
- Determine the Energy to be lock out.
 - Make sure All hazardous energy sources are identified
- Decide on the LOTO process.
- Decide on the LOTO devices to be use.
 - Make sure to select Safety compliance devices
- Establish LOTO procedures.
 - Make sure to established process specific procedures
 - Details but simple procedures
- Trained Authorize personnel in LOTO system.
 - Make sure the personnel's are persons well verse with the Service/Maintenance processes
- Evaluate for improvement.
 - Rechecked on procedures for effectiveness and update where necessary.

BRADY Lockout/Tagout Posted Procedure

ID#: 31-17 Name: Lafarge Selangor Station: Plant #1
Contact: 9/10/2014 Revision: 9/10/2014 Description: Working at Cooler Internal

3 Lockout Points **Note:** Make sure to release all Stored Energy

MEP Diagram / Energy Isolation Devices Locations

Lockout Steps			
Step #	Action	Info	Verification
1 Electrical E-1	Kilo Main Drive (25A-02-1)	This E-1 Breaker is located on the front side of the machine. Turn Breaker to the off position and lock out. Use a Electrical plug lockout device.	316-DR15-MT10 Attempt to restart at control panel.
2 Electrical E-2	Kilo Inverter (30A-03)	This E-2 Breaker is located on the front side of the machine. Turn Breaker to the off position and lock out.	316-ID17-MT10 Attempt to restart at all control panels.

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Safe Work Procedures

Five simple steps for effective lockout of plant, machinery or equipment	Five steps for restoring the machine after operation
1) Announce the shutdown	1) Check that all tools have been removed from the machine and safety guards have been replaced on the machine
2) Shut down the machine	2) Verify that all personnel are safely clear of the machine
3) Disconnect all energy sources	3) Announce that the machine would be turned on
4) Apply lockout using lockout and tagout devices	4) Remove the lockout and tagout devices and re-energise the machine
5) Verify the isolation and lockout	5) Inform personnel concerned that machine is ready for operation

Abandoned lock removal Authorization form

Appendix B: ABANDONED LOCK REMOVAL AUTHORIZATION FORM

Note: Only supervisors can remove abandoned locks.

Name of Person whose lock must be removed: _____

Has an attempt been made to contact him or her? YES NO

Why is it critical to remove this lock now?

Are you sure it is safe to remove this lock? YES NO

Supervisor's Name: _____

Signature: _____

Date: _____

EH&S Representative: _____

Signature: _____

Total LOTO Solution

LOPro procedure writing S/W

Training video, Material & poster

Brady/ABUS Locks

Master Key charting system

Group LO

Mechanical LO

Electrical LO

Pneumatic LO

Tags

Non-conductive

Spark resistant

Customized

Expandable

Lock box

Hasp

Cable LO

Universal LO

Circuit breaker LO

Plug LO

Tank LO

Gas cylinder LO

Standard

Customized

Corrosion resistant

Adjustable shackle

Central data-based

Valve LO

Switch/Button LO

Fuse LO

Air/Vacuum LO

Tamper proof

Padlock labels

Electrical LOTO Devices



Brady's electrical lockout devices excels in

- Material superiority
- Complete range to meet industry standard designs & common breaker brands
- Ease of use
- Innovative patented design (EZ Panel Loc™)



WHEN PERFORMANCE MATTERS MOST™

Mechanical LOTO Devices




Brady's mechanical lockout devices excels in:

- Innovative products with material superiority
- Complete range to meet industry standard designs
- Ease-of-use



Brady Lockout writer software



Lockout-Tagout Posted Procedure

ID#: CMA-2 430266 **Facility:** Camden Road **Location:** Cell125145



Create: 7/23/2013 12:19:45 **Description:** **Printer:** 005-413-931-RTU One, Serial #5659

4

Lockout Points

Lockout Application Process

1. Notify affected personnel. 2. Properly shut down machine. 3. Isolate all energy sources. 4. Apply lockout devices, locks, & tags. 5. Verify total de-energization of all sources.

Lockout Steps		
Step #	Action	Info
1.	Turn off the pilot.	The alarm will sound. Push the Silence button on the control panel to turn off.
2.	This machine is capable of generating extremely high temperatures. Leave door open for at least one hour to allow for proper cooling.	Oven Door 
3.	Turn the exhaust off.	The switch is located on the main control panel that is on the west side of the machine.
4.	Turn the recirc. off.	The switch is located on the main control panel that is on the west side of the machine.
5.	Turn the cooler fan off.	The switch is located on the main control panel that is on the west side of the machine.
6.	The E-1 Disconnect is located on the Front side of the machine. Using a Lock, aluminum, blue, 1" (53020) lockout device, turn Disconnect to the off position and lock out at E-1.	Main Control Panel 
7.	The E-2 Exit Conveyor Disconnect is located on the North side of the control panel. Turn Disconnect to the off position and lock out at E-2.	Use a Lock, aluminum, blue, 1" (53020) lockout device.

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Brady Safety padlock

Features & Benefits:

- Various materials (Plastics, Steel, Brass, Aluminum) to meet usage conditions & requirements
 - chemical & corrosion resistance
 - rust protection
 - spark resistance
 - non-conductive (electrical shock resistance)
 - light-weight
 - Keyed different or Custom key charting
- 5-6 pin cylinders vs conventional 4 pin for superior tamper resistance
- Various colours for easy grouping & identification
- Lock labels for easy write-on identification



Brady LO Tag

OSHA's requirements for Tags

- Standardization by size / shape / color
- Understandable by all
- Durability under intended usage conditions (*legibility must be maintained*)
- Withstand up to 50lb (22.7kg) unlocking strength
- Identify tag applicator



Brady's Tags:

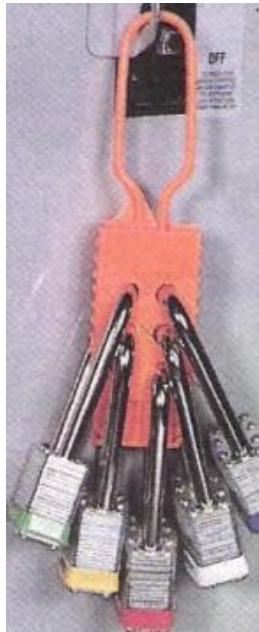
- customizable
- various material durability grades
- can withstand 50-80lb (22.7-36.3kg)
- meets all OSHA's specs



Group LO

Useful for activity involving multiple users; to ensure everyone's safety till full completion of job & prior to re-energizing source

Lockout Hasps



Group Lock Boxes



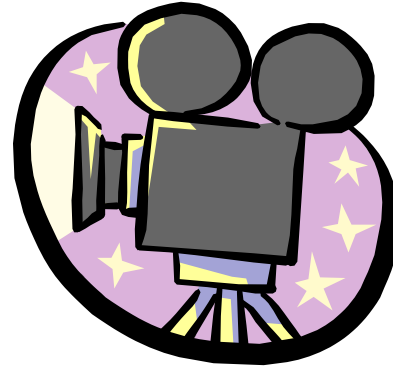
Portable LO Kit





LockOut Station



Recap



CAUTION

-  *The next few slides will be unpleasant for viewing. It will cause some uneasiness and may trigger some emotional reactions.*
-  *For those who do not wish or feel uneasy to watch them, please let me know before I proceed further.*

If you are not serious about Safety!!!



How can you make sure this does not happen!!!



If you are not serious about Safety!!!



If you are not serious about Safety!!!



Save Yourself !!!



Welcome !!!

TOP-RIGID

Industrial Safety Supply Inc.

Booth #336

Direction: Straight up from
H2 Entrance



LOCKOUT SAFETY

ENERGY CAN BE DANGEROUS AND PRESENTED IN DIFFERENT FORMS:

- TOUCH OUT FOR STORED ENERGY (SPRING TENSION)
- TOUCH OUT FOR RASPED LOADING COILS
- SPRING (NO CHARGED CAPACITORS OR AIR) BE RELEASED

WHAT IS ENERGY LOCKOUT?

A lockout is a device which provides positive means for isolating a switch, valve, raised load, control system or any energy source responsible. Lockout is a necessary step for ensuring worker safety prior to performing maintenance or servicing work. The lockout device may be a padlock, hanging padlock, restraining bar, chain or padlock or any device that prevents machinery from being energized or from releasing stored energy.

WHAT IS A TAGOUT?

A lockout tagout (LTO) is used to isolate the energy source and prevent the use of the equipment. The tagout device may be a padlock, hanging padlock, restraining bar, chain or padlock or any device that prevents machinery from being energized or from releasing stored energy.

ELEMENTS OF AN EFFECTIVE LOCKOUT SAFETY PROGRAM

- 1. DETERMINE WHICH ENERGY SOURCES SHOULD BE LOCKED OUT**
 - Identify energy sources from a variety of energy media for pressure from gases or fluids, repetitive stored electrical, mechanical, thermal or nuclear energy. Store energy in electric capacitors and stored energy in hydraulic and pneumatic systems.
- 2. CAN LOCKS BE APPLIED?**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 3. DETERMINE THE LOCKOUT SOURCE**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 4. DETERMINE WHO WILL APPLY LOCKOUT/TAGOUT**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 5. WHEN A TEAM OF MAINTENANCE PERSONNEL ARE INVOLVED**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 6. ENSURE ALL STORED ENERGY HAS BEEN SAFELY RELEASED ON LOCKED OUT**
 - Identify energy sources from a variety of energy media for pressure from gases or fluids, repetitive stored electrical, mechanical, thermal or nuclear energy. Store energy in electric capacitors and stored energy in hydraulic and pneumatic systems.
- 7. FOLLOW COMPANY PROCEDURES FOR MAINTENANCE**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 8. BEFORE REMOVING LOCKS/TAGS AND RESTORING MACHINERY TO OPERATION, ALONE'S SIGNATURE**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 9. ONLY THE INDIVIDUAL WHO APPLIED THE LOCK & TAG SHOULD REMOVE IT!**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.
- 10. CONTINUED EMPLOYEE TRAINING AND EDUCATION**
 - Identify the lockout device to be used. Locks should be applied whenever possible. Consider a possible energy source for electrical, pneumatic, hydraulic or other energy storage before proceeding with any maintenance work.

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WHEN PERFORMANCE MATTERS MOST™



BRADY WHEN PERFORMANCE MATTERS MOST™