

ELECTRICAL HAZARDS

be changed by a locksmith and two new keys cut for it

In case of combination locks, only the immediate supervisor, or whoever determines the company's or department's safety policy, should have a copy of the combination

To make lockout systems operable, the purchasing department should be requested to buy either equipment with built-in locking devices or equipment designed for the insertion of padlocks. In plants where older equipment is in use, or where explosion-proof or dust-tight equipment is installed, it may be necessary for the maintenance department to construct attachments to which locks can be applied. For example, special tongues to hold several locks, common hasps to cover operating buttons, and sliding-rod devices which can be extended and locked in position to prevent operation of control handles can be devised

No matter what method of locking electric switches "off" is used, effective control can be maintained only by constant supervision and by training maintenance men in the safe routine. Following is a lockout procedure which is generally acceptable

- 1 Alert the operator
- 2 Before starting work on an engine or motor, line shaft or other power transmission equipment, or power-driven machine, make sure it cannot be set in motion without your permission
- 3 Place your own padlock on the control switch, lever, or valve, even though someone has locked the control before you. *You will not be protected unless you put your own padlock on it*
- 4 If no padlock is available, place a MAN AT WORK sign at the control and block the mechanism in some effective manner. Make sure that both sign and blocking are fastened securely so that they cannot be easily removed
- 5 When through working at the end of your shift, remove your own padlock, or your own sign and blocking. Never permit someone else to remove it for you, and be sure you are not exposing another person to danger by removing your padlock or sign
- 6 If you lose the key to your padlock, report the loss immediately to your supervisor and get a new padlock

Removing fuses

When it is necessary to remove a fuse, the operating switch should be opened to remove the load and the fuse should be extracted with an insulated fuse puller. If the fuse is not protected with a switch, the supply end of the fuse should be pulled out first. When the fuse is replaced, the supply end should be put in first.

It is important that a fuse be replaced by one of the same type and size and that a copper wire or other conductor never be substituted.

For work on lines carrying 440 volts and over, the sources of energy can be opened by tripping the circuit breaker and then opening the disconnects. The conductors should be tagged, and, if possible, a substantial grounded conductor should be clamped to each leg of the circuit before the work is started. The grounding conductors should be removed just before the circuit is re-energized. As an added precaution, tests should be made with a voltmeter or other standard approved tester to make sure the circuit is clear.

In emergencies where the areas around fuse boxes are wet, wood platforms, insulated stools, or rubber boots should be used by maintenance workers.

Wiring

Electrical installations should be made in accordance with the *National Electrical Code*, and each job should be properly inspected. The use of temporary wiring should be discouraged even though it may be reasonably safe when first put in. As a job progresses and repairs or installations are made, temporary wiring may become unsafe because it is not properly protected from mechanical injury.

Maintenance men should make it a practice to inspect plugs and connections on portable electric equipment and to see that the third wire frame ground is properly connected. Where there is any doubt about the safe operation of a tool, it should be removed from service, tagged, and returned to the tool room for repairs.

Extension cords should be well insulated, the sockets made of insulated material, and the lamps protected against breakage. When using extension cords, workers should string them so that they will not trip either