

## Safe System of Work – Isolation and Lock Off

Stored energy whether it be electrical, pneumatic, hydraulic or gravitational can cause equipment to move or pipes to burst. A system for controlling that energy is an essential measure to reduce risk when maintenance is being undertaken.

Ensuring that people are aware of where to isolate and having a process for them to prove that the isolation is effective will remove the risk of contact with moving machinery, pressurised air and oil injuries.

This procedure gives guidance on an isolation and lock off system.

**BEFORE WORK BEGINS ON ANY PART OF PLANT OR MACHINERY IT MUST BE ISOLATED AND LOCKED OFF.**

### Pre-Operation

#### Personal Safety

➤ **What is the task?**

Make sure you have thought through exactly what any new task involves before you start.

➤ **Do I understand how to do the task correctly?**

- Have I been trained?
- Am I competent?
- Is it a familiar task – or a one-off that I may not be able to tackle?

If you are sure you are trained and competent then carry on. If not **STOP** and refer to your supervisor.

➤ **Do I have the right tools and equipment?**

Make sure you use the right kit in the right way:

- Is it in good condition or is it damaged?
- Is it up to the job?

If the equipment is ok, then carry on. If not, **STOP** and refer to your supervisor.

➤ **Do I know who or what may be harmed?**

- Am I aware of the hazards?
- Am I aware of other people in the area?

If you aren't aware of what could hurt you or your colleagues, how will you protect yourself and them? If you are not sure, **STOP** and refer to your supervisors.

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➤ **Are controls in place?**

If you know what the hazards are, what controls are there in place to minimise the risks?

- Guards
- Procedures
- PPE
- Exclusion zones
- Inspections

If you do know what the controls are make sure they are in place. If they are not, **STOP** and refer to your supervisor.

➤ **What is isolation and lock off?**

Isolation and lock off are two distinct control measures. If used correctly the control measures will ensure that people do not come into contact with moving equipment, live electrical circuits or stored energy from electricity, pneumatics, hydraulics or gravity.

They involve physically isolating the source of energy from the individuals concerned and applying some form of personal lock to ensure that equipment is not inadvertently re-energised.

➤ **How do you isolate?**

By turning either panel switches in the electrical control room or local isolators (usually adjacent to the equipment) to the off position. Alternatively, it can be done by releasing energy, i.e. closing taps and valves, chocking weights and moving parts such as hopper doors, crusher jaws and flywheels, or removing material from conveyors and bins.

➤ **How do you lock off?**

When electrical isolators are switched to the off position, holes line up through which a calliper can be inserted and locked with a personal padlock. This ensures that unless the padlock is removed the equipment cannot be switched back on and re-energised. Other forms of energy can be locked off by applying valve and tap isolators.

➤ **Are stop buttons and pull wires a safe means of isolation?**

Stop buttons, trip wires and keys are NOT a means of isolation. These devices are linked to the control circuit and do not isolate the energy from the equipment.

Reference documents

Health & Safety Executive – Electricity at Work – Safe Working Practices (HSG85)

Electrical Safety Council

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## What does the law say on Safe Isolation?

To comply with regulation 14 of the Electricity at Work Regulations, dead working should be the normal method of carrying out work on electrical equipment or circuits. Live working should only be carried out in particular circumstances, where it is unreasonable to work dead.

The EAWR states:

No person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless -

(a) it is unreasonable in all the circumstances for it to be dead; and

(b) it is reasonable in all the circumstances for him to be at work on or near it while it is live;

and

(c) suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury.

It should be noted that all the three conditions must be met in order for work on or near live conductors to be carried out.

When isolating the main source of energy, it is also essential to isolate any secondary sources such as standby generators, uninterruptible power supplies (UPS) and microgenerators.

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## SYSTEM OF WORK

Before work begins on any part of plant or machinery it must be ISOLATED AND LOCKED OFF.

All equipment that needs to be isolated must be isolated by the client on site. YOU must confirm that the equipment that you will be working on is isolated correctly and that ONLY you can remove the isolator. E.g. You have the key.

### You should:

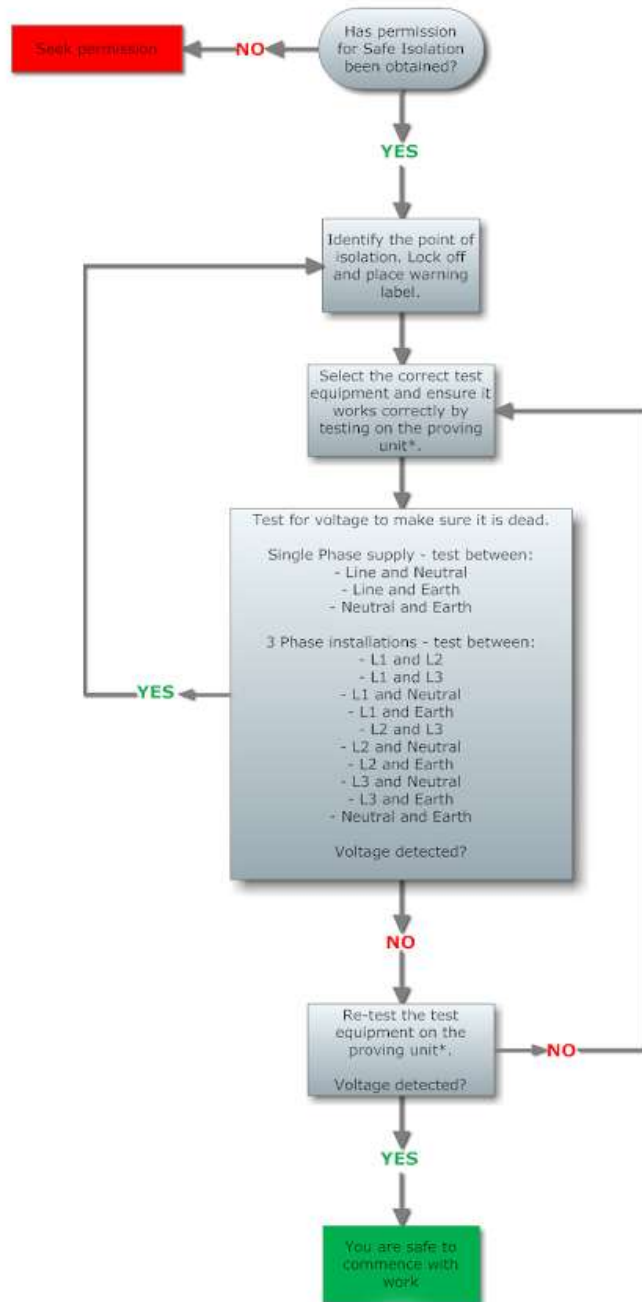
- ✓ SEEK permission for the isolation of the equipment
- ✓ ENSURE that all stored energy is safely released prior to working on equipment (moving parts or equipment is chocked or safely secured).
- ✓ ALWAYS use an isolator for protection. Do not rely on stop buttons or trip wire switches which are control circuits and they do not isolate the main power supply. Remember that equipment may start immediately a local isolator is closed.
- ✓ NEVER isolate a drive if it is running use a stop button first. ‘
- ✓ ALWAYS check that the lock off is effective by attempting to start all equipment which has been locked off before starting any work on it.
- ✓ KEEP the key in your possession until you have completed working on the equipment.
- ✓ ALWAYS ensure that every relevant drive is isolated with a separate padlock, as some situations require more than one drive to be isolated.
- ✓ RETURN the key so that the lock can be removed as soon as you have completed the work.
- ✓ CHECK, before the lock is removed, that:
  - Moving parts are free and clear to run Guards have been properly fixed
  - Stop buttons and trip wires are reset
  - All persons are clear of the danger area
- ✓ ALWAYS check that the lock-off has been completed correctly.
- ✓ REPORT to the on-site contact or to the Catena office if someone has forgotten to remove his padlock at the end of maintenance work.
- ✓ DO NOT ATTEMPT to remove or tamper with an isolator padlock without the direct authority of the manager.

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## QUICK CHECK FOR SAFE ISOLATION

A process like the one shown below should be followed by the client when they are isolating the equipment to be maintained/tested.



Version	Date Approved	Publication Date	Approved by	Summary of Changes
1	05/19	05/19	MOM	Initial Approval
-	-	-	MOM	Reviewed 05/20 No changes
-	-	-	KM	Reviewed 05/21 No changes
-	-	-	KM	Reviewed 05/22 No changes
-	-	-	KM	Reviewed 05/23 No changes
-	-	-	KM	Reviewed 05/24 No changes

