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Tag out, lock out and verify - internal rules

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1 Purpose

This rule is aimed at preventing people or equipment from being damaged or injured due to the release of energy (electricity, compressed air, hydraulics, potential energy, chemicals in piping systems, media, etc.) and to avoid the inadvertent start-up of machinery during work, inspections, repairs, cleaning or other activities on or near the equipment in question.

This rule is a means to fulfill the Swedish Work Environment Authority's requirements on AFS 2008:03 (Machinery), AFS 2006:4 (Use of Work Equipment) and AFS 2001:1 (Systematic Work Environment Management), inter alia.

When you tag out and lock out a part of the facility you are creating a protective barrier in a demarcated area which is normally dangerous to be in. It is therefore not permissible to remove other people's locks without their knowledge. The penalty for removing someone else's lock is handled by the respective manager and, if applicable, by an authority if such an incident becomes known to the authority.

Implementing this rule is particularly important when the equipment is being started or operated by remote and when several people are working in the same area.

The Lock out, Tag out rule (LOTO) can be only circumvented in exceptional cases. Either according to 5.4, see below, or when fault tracing on a machine which needs to be operating in order to localize the fault, for example. LOTO should be applied when the fault has been localized. However, in both cases a risk assessment is required.

2 Definitions, terms and concepts

Risk area

Any area within and/or around the work equipment where the equipment can entail a risk of ill-health or accidents to any person wholly or partly present there. (Definition according to Swedish Work Environment Authority regulation AFS 2006:4).

Operative personnel

Personnel that belongs to the production plant and normally operates a facility and has the necessary knowledge to secure a risk area in the facility. The section manager can appoint another person with the equivalent knowledge. That person is then defined as operative personnel for the purposes of these instructions.

Facility lock

A lock which is not personal but belongs to a work site to be used for primary locking. A facility lock must always be marked with text or have a tag marked "*facility lock*".

Primary locking

One of two alternative LOTO methods, see item 4.2 below.

Personal lock

A lock which is personal and which always should be labelled with an ID tag.

Securing

To make a risk area in a facility safe to enter.

3 Target group

All personnel entering a facility's risk area and operative personnel who will do the primary locking.

4 Execution – two different locking options

LOTO can be done in two different ways depending on the nature of the work:

- Personal locking
- Primary locking and personal locking

The person who will be inside the risk area decides which locking method should be applied.

It is essential to know in advance, i.e. before tagging out, which of the two options you will be applying.

4.1 Personal locking

This principle means to secure yourself by means of LOTO. This is applied for individual, isolated work, e.g. when a sole operator is cleaning/servicing a machine or in the case of emergency, unplanned work.

However, those who will be working inside a risk area can always request the operative personnel to use primary locking as described below.

4.2 Primary locking – and personal locking

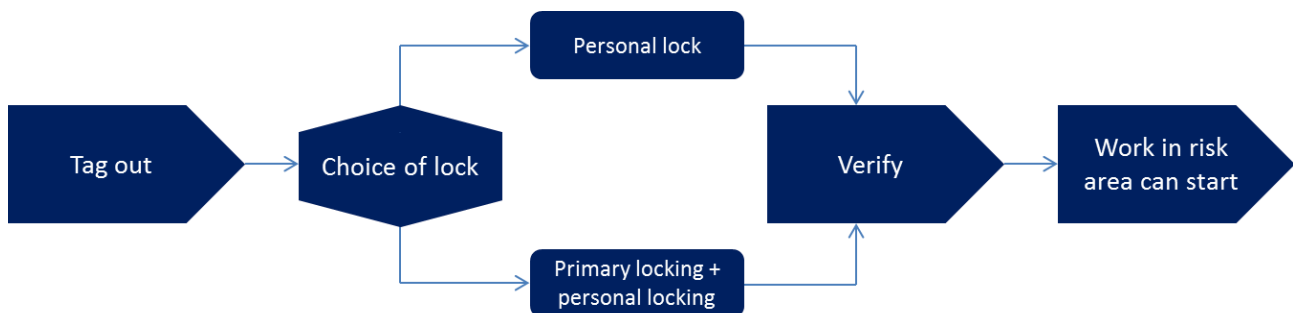
This principle means that the operative personnel tags out, and do the primary locking with a facility lock and secures a risk area before the personnel that is due to work in the area locks with its personal locks. This is applied for work which had been planned in advance or which will be repeated at regular, foreseeable intervals.

4.2.1 Communication and changeover when primary locking

For the above option to be fully safe, there needs to be clear communication between the operative personnel and the people who will be inside the risk area. After primary locking, the operative personnel must clarify which risk area has been tagged out, the risk area's demarcation, which parts have been secured and the exact boundaries to the nearest adjacent risks. Changeover can be done in writing or orally depending on which option the operative personnel has chosen at the workplace in question.

When primary locking, the operative personnel is responsible for securing the risk area. Individual workers inside the risk area are responsible for locking with their own locks.

It is not permissible to do primary locking only without using personal locks when someone is due to enter a risk area.



Flow description, measures before starting work in a risk area.

4.3 General

Equipment with the power and/or energy sources listed below shall be tagged out/ blocked, locked and, if necessary, be equipped with a sign as seen in the image in item 6 below.

- Electrical equipment.
- Equipment that emits radiation.
- Other pressurized media such as hydraulics, pneumatics, water pipes, steam, chemicals in the piping system, media, steam or other gases.
- Equipment or equipment components that store kinetic energy.

In addition to these instructions there may also be *local* instructions that describe in more practical detail the routines that apply at *that* particular workplace. However, the basic principle is that local instructions may not conflict with these instructions. Local instructions need to be documented and properly communicated.

4.4 How to tag out, lock out and verify

It is not permissible to secure a risk area simply by pressing an emergency stop button/triggering a light beam or by switching the control device to Off. Additionally, it is not sufficient to simply place a sign that reads “work in progress” or similar next to the disconnecter switch. Locks should always be used.

Inform the workplace that the equipment needs to be tagged out and locked out. If necessary, put up a “work in progress” sign.

- Disconnect the safety switch or immobilizer (switch) for the equipment in question. Near pressurized devices (hydraulics, pneumatics, water piping, potential energy, chemicals in piping systems, media, steam and other gases) the system must be depressurized by venting or load-relieving.
- Block physical access to the switch/valve etc by mounting shears/wire and safety lock. The moving machine parts should be equally weighted and mechanically blocked.

4.5 Verifying – ensuring that the correct parts are secured

Before entering a risk area, the personnel must ensure that the correct equipment is blocked by test-starting the equipment with a regular starting element (where possible) and ensure that no additional blocks are required elsewhere. A large number of machine units, both powered and non-powered, can be put into motion by another unit on the same line. It can therefore be insufficient to only tag out and lock out the machine in question. Moving machine parts must therefore be mechanically blocked where possible.

When tagging out the equipment using an immobilizer, the equipment is off limits until the signal lamp is lit and the equipment is tagged out and locked out.

If it is not possible to secure the facility using regular methods, the professional group in question, (electricians, mechanics etc) or nearest manager/or senior technician should be contacted. The professional group in question issues a work permit. No work may begin until the equipment is secured.

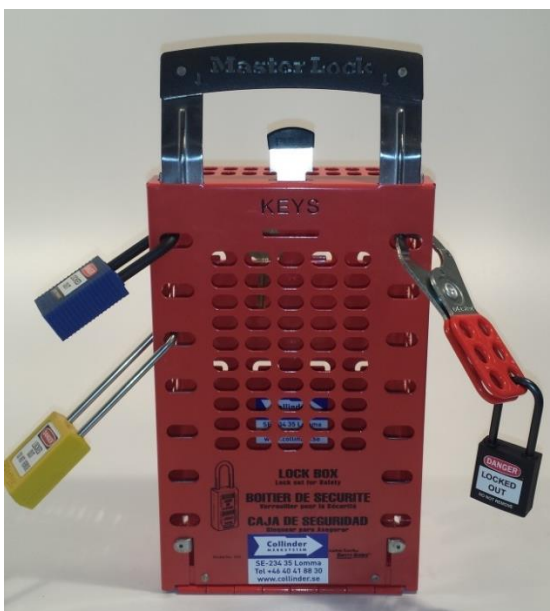
4.6 When several people are working at a facility at the same time

When *several* people from different workplaces are carrying out work inside a risk area *at the same time* it always, and automatically, elevates the level of risk. At SSAB, there are a number of examples of serious incidents connected with *several* persons working inside the same risk area.

It is not permissible to enter a risk area and maintain that you are secured because another person has fitted their lock.

Clarify which of the two options described above will be used – personal locking OR primary locking and personal locking.

Operative personnel do a primary locking with a facility lock and/or each worker blocks by locking with their own personal locks. If there are many people inside the risk area who need to fit their personal locks, the disconnecter switch can be locked out using one lock only. However, this requires that the key to the lock is hung in a specially designated lock cabinet, see example pictured below. Afterwards, everyone who is inside the risk area must lock the lock cabinet's door with their own personal locks.



Example of specially designated lock cabinet

The lock must be fitted in such a way that the block cannot be opened without all the locks being removed.

When repairs/work have not yet been completed by the team that began them, or when the replacement personnel arrives, the replacement personnel must fit their locks and the other locks be removed. As part of the changeover process personnel must ensure that the facility is locked out with the correct lock until the work is completed. If there are any questions, please contact the technician, manager or their replacement.

It must be unequivocally clear to every person who is inside a locked risk area *which lock* that person is protected by. If you are in the slightest doubt, contact the work management.

4.7 Restart of facility/removal of lock

Each person opens his/her block when they are no longer required in the risk area. The staff and their equipment must be removed from the risk area. Only then can the last lock be removed.

In the case of primary locking, operative personnel must be informed when the procedure is completed. Operative personnel will then check that it is risk-free to start up before they remove the facility lock.

4.8 Mislaid blocking equipment, protective locks or identification tags

If protective locks or identification tags are mislaid, the owner must report the loss to their immediate manager.

4.9 Contractors

Senior managers, coordinators and contact people shall ensure that agency staff, contractors and their employees use protective locks and follow our routines including the rules and regulations.

The contractor must bring their own personal protective locks. The lock must be a size that fits SSAB's "shears". The lock must be identifiable with the company, name and telephone number of the person who used the lock. The markings must be permanent.

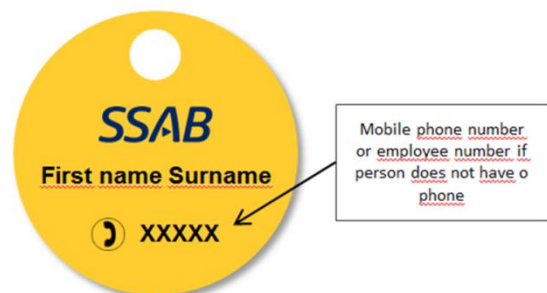
5 Routines

5.1 Identification of *personal locks*

It must be possible to identify from the markings on personal locks *who* has locked out.

Personal locks must always be marked with an identification tag, see figure. The identification tag must clearly specify:

- Name of company
- Name (first name, surname)
- Employee number or telephone number



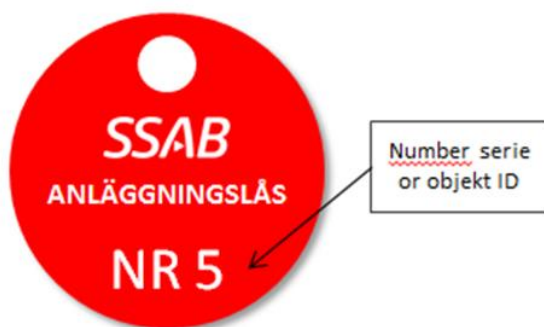
*Example of identity tag for **personal locks**, with the correct marking*

Personal locks or identification tags may never be transferred or given to another person for use in another person's name.

Regular locks for loan are available at the department and can be signed for. The locks must be marked so that they are identifiable. Locks must be returned after use.

5.2 Identification of *facility locks*

Each lock and key set must have its own identity tag marked "ANLÄGGNINGSLÅS" (*facility locking*), see figure. The tag must be red and marked with the Object ID or ID number.



*Example of identity tag for **facility lock**, correct marking*

Both types of tags can be ordered from Fastighetstjänst.

5.3 Training

SSAB-personnel implementing LOTO according to this instruction must undergo education according to established routines.

Contractors personnel entering a facility's risk area and implementing LOTO according to this instruction must also undergo education. The education should be held by contractor's supervision.

5.4 Exceptions, tagging out without locking out – and accompanying conditions

The exception to using a lock can be made if it involves a specific, repetitive, and clearly demarcated work task where the repeated fitting and removal of locks within a short time interval will be unmanageable. The first condition is that the risk area should be protected by tag out. Another condition for not locking out is when a written risk assessment is being/has been done for that specific work task. The risk assessment must be documented. The risk assessment must specify why a lock out is not necessary and how the risk of inadvertent starts has been prevented.

If an exception is to be made, a written risk assessment must be performed. The assessment must specify why a lock out is not necessary and how the risk of unintentional starts has been prevented.

The exception may only be made during normal operation in production. Never during interruptions, maintenance work, repairs or other work outside the normal production flow. As regards fault tracing, see item 1.

5.5 Special rules for certain categories of professional electricians

In locked electrical rooms and in special situations for professional electricians, there are the instruction "Arbetsbesked" ("work information"), doc.id 158377 together with the forms Work/Operating certificate - form OX1021 - which should be used.

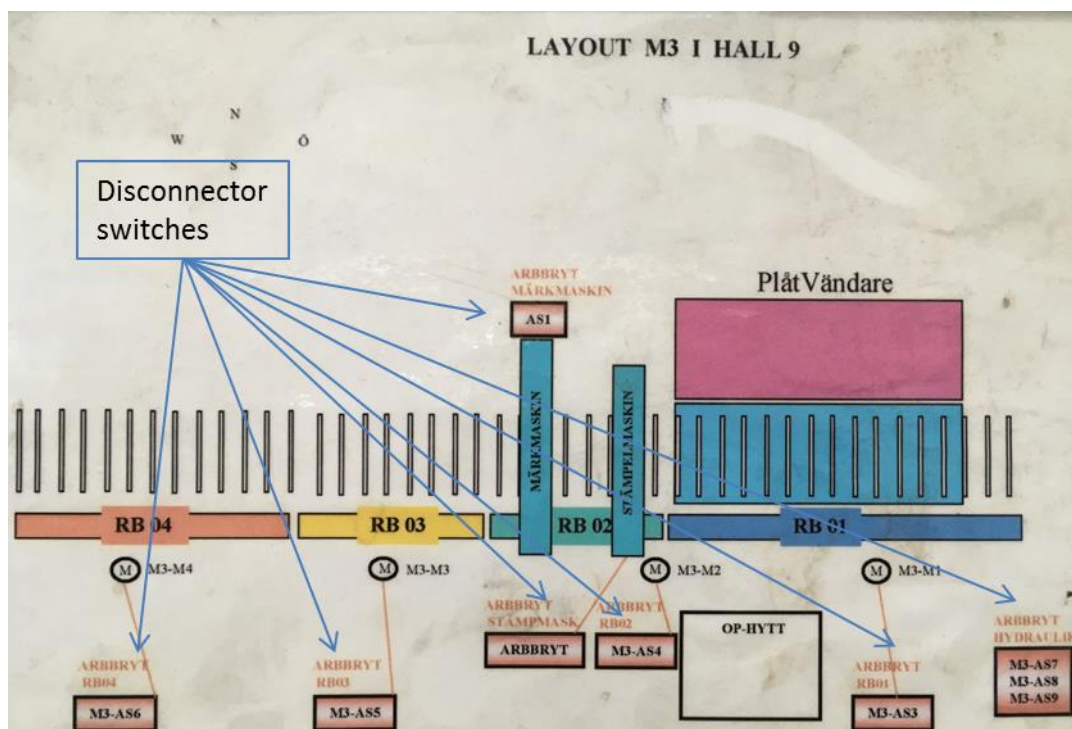
This is an industrial common method in which a "arbetsbevis" (*work certificate*) is used as a confirmation that measures have been taken on work without voltage. The work certificate means that the measures will remain in place until an "driftsbevis" (*operating certificate*) has been signed and returned. It is also described in "ESA Industri & Installation".

5.6 Removal of remaining blocks

Remaining blocks may be removed as follows:

- The owner of the lock is requested to unlock or give their approval to the block being removed.
- If it is not possible to contact the owner of the block, a thorough investigation according to the “Checklist for removing blocks” (**which is available as a template in Oxelösund’s Management system¹**) should be performed at the workplace in question in collaboration with the staff concerned. The checklist must be signed by the manager/coordinator and safety representative. All incidents must be reported in MIA.
- When the designated supervisor has assured himself/herself that the level of safety is satisfactory, and the checklist has been signed, the block may be opened.

6 Pictures



Picture 1. Example of map for “tag out, lock out and verify” divided into areas and their cut-off points

¹ All templates can be found on the workflow/workplace/organization website in the Oxelösunds Management System where each department/section has decided they should be located. Ask your local administrator for help.



Picture 2. Cable with lock