

SAFETY REGULATION VV 09 Locking installations	 Balen/Pelt
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Nature of the last modification: REVISION: CONTROL MEASURES AFTER ACID INCIDENT HEN-690684	
Date of last modification:	27/02/2023

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1. Subject

This procedure describes the uniform system for systematically and safely working on installations. In this way, we want to prevent people from being exposed to dangerous situations such as the unwanted activation of installations. This concerns energy that can be released by electrically driven equipment, hydraulic and pneumatic systems and equipment, potential energy in the form of fall energy and pipes that are under pressure or contain a (hazardous) substance that can possibly be released.

2. Scope and exceptions

This procedure is generally valid for all activities, [both for production and maintenance tasks](#), on or in the installations of Nyrstar Balen and Pelt.

2.1. Aggravation of requirements:

[When working on systems that are fed by steam, strong acid or base, the method of a complex locking must always be applied. In addition, the locking sheet must be checked by the lock planner of the relevant department.](#)

2.2. Exceptions and deviations

2.2.1. Exceptions:

The isolation procedure does not apply in the following situations:

- Pipes with water as a medium with a maximum of 4 bar pressure and a temperature <50°C.
- Compressed air pipes <2 bar

2.2.2. Deviations:

[In situations where not all insulation measures can be taken in accordance with the described definitions, the superintendent or production coordinator must decide on the basis of a Task Risk Analysis about any alternative/additional safety and control measures \(eg. PPE\). It is important that the established working method has the same level of protection. This authority cannot be delegated to subordinates. The decision must be recorded in writing. This method must then be classified as 'critical' and explicitly stated on the work permit or lockingsheet. The performers must be demonstrably instructed of the Task Risk Analysis.](#)

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3. Links

Document description	Document No.
Work permit safety regulation	XP-452-VV-0-00000
Lockingsheet template	XF-452-FCH-0-00009
Application form removing locks	XF-431-FREQ-0-00001
Lockbox on location form	XF-452-FREC-0-00002

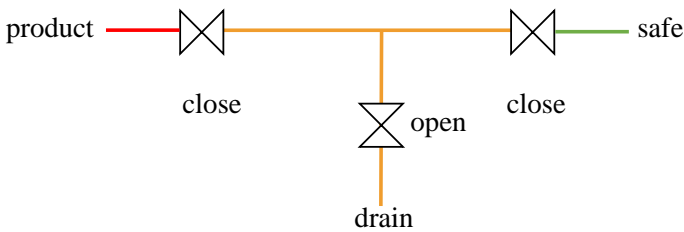
4. Definitions

Executor	An employee who applies his personal lock to a machine or installation for the purpose of entering a locked installation. Performer(s) of the work after securing.
Cordinating executor	A coordinating Nyrstar employee or a person in charge of a third party company carrying out the works.
Locking Scheduler	The one in charge of planning and documenting a complex lock. The role of lock planner can be fulfilled by sufficient and demonstrably instructed persons appointed by the service management.
Lock coordinator	The one in charge of properly temporarily removing locks. The role of lock coordinator can be fulfilled by someone with the same level of education as that of the provider.
Permit Provider	Is the provider of the work permit. Trained person who gives the release to the performer(s) to start the work.
Locker	Trained person who locks the installation. He may not act as a inspector.
Inspector	Trained person who verifies the applied lockouts and tests of a complex lock.
Locking	Placing a lock on a locking point (for example, a work switch, valve, fuse,...) to ensure that the installation cannot start until the lock is removed.
Lock out	The set of measures required to be able to work safely on an installation or part of it. This means that the installation is made energy-free, lock-outs and tested.
Locksboard	A location where all production locks of a department are tracked and visualized.
Locking sheet	Is a written document identifying all energy sources and all locking devices. This includes the method of efficient locking to ensure that the installation is energy-free.

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Check	Intended to confirm that: <ul style="list-style-type: none"> • The lockingsheet is filled in correctly. • All energy sources are locked correctly. • The installation is getest. • The installation is energy-free.
Test	Confirm that the entire installation is energy-free. For pipes or containers, it is shown that they are empty <u>and</u> that liquids can no longer flow in. This can be done, for example, (not limitative) by opening an drain valve, temperature measurement on the pipe,...
Energy source	Any energy source: electrical, mechanical, hydraulic, pneumatic, chemical, heat, gravity, force of spring, etc..
Unlock	The set of measures required to be able to safely put an installation or part of it back into service by removing lockouts.
Unlocker	Trained person unlocking the installation.
Locking equipment	A mechanical device that causes physical interruption of energy supply. This can be a manually operated switch, an interruption switch, a disconnect switch, a valve, block and bleed, a device that interrupts energy, etc... Controls switched in the steering circuit are not considered locking devices.

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Disable & Neutralize	Stop the supply of energy and remove residual energy.
Block & Bleed	Two valves with the possibility to drain the intermediate pipe. 
Lockbox	Lockable device to store keys, mandatory to use in complex locking. This is closed with a grouplock and a lock of the executor.
Simple locking	Locking of max. 3 lockouts.
Complex locking	Locking from 4 lock-outs using a lockbox.
Production intervention Locking	Locking by a trained production employee (competency matrix, level 3) with only his personal locks (up to 3 locks).
Production lock	Lock with yellow color coding applied by locker production.
Individual lock	Red colour-coded lock applied by executor Asset or by production people during the performance of their tasks.
Production Group Lock	Lock with green color coding applied to a lockbox by locker production.
Contractor lock	Lock with blue color coding, identifiable by person and company applied by external performer(s).
Asset group lock	Black colour-coded lock, identifiable applied by asset or contractors to abandoned non-operational equipment.
Blue lock-box	Can only be used with "lock-box on location".
Seal	Device to seal a lockbox to ensure that the lock remains intact for an extended period of time.

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5. Responsibilities and authority

Employees can have different responsibilities depending on their partial function in the locking process (locker / controller / unlocker / lock planner / provider / performer). Each employee is responsible for fulfilling the tasks associated with his role in the locking process, thus obtaining a safe, energy-free installation.

6. Training

All Nyrstar employees working on production facilities must have taken note of this safety requirement and receive additional specific training on the installation of latches to installations. A test must be linked to this training. The training is documented and certificates are issued to the persons concerned. This training must also be refreshed 3-yearly / when adjusting the procedure.

Third parties are informed of the obligation to use personal locks in the gate film.

Lockers and suppliers must have sufficient knowledge of the production installation to properly secure / release it. For this, they must receive additional training, in accordance with the department's competence matrix. This training includes a trajectory with on-the-job training and a test (written and possibly practical) to prove that the employee has sufficient knowledge and experience to be allowed to lock. A refresher training is provided every 3 years or when the procedure is adjusted.

An employee can be appointed as a locker / permit provider when they have achieved a level 3 in the competency matrix.

The department management keeps an up-to-date list of all persons who are allowed to lock at the various installations.

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7. Working method

7.1 System

Within the locking procedure, we can distinguish 3 categories:

- Simple locking
- Complex locking
- [Production intervention locking](#)

The following paragraphs describe the steps within these categories.

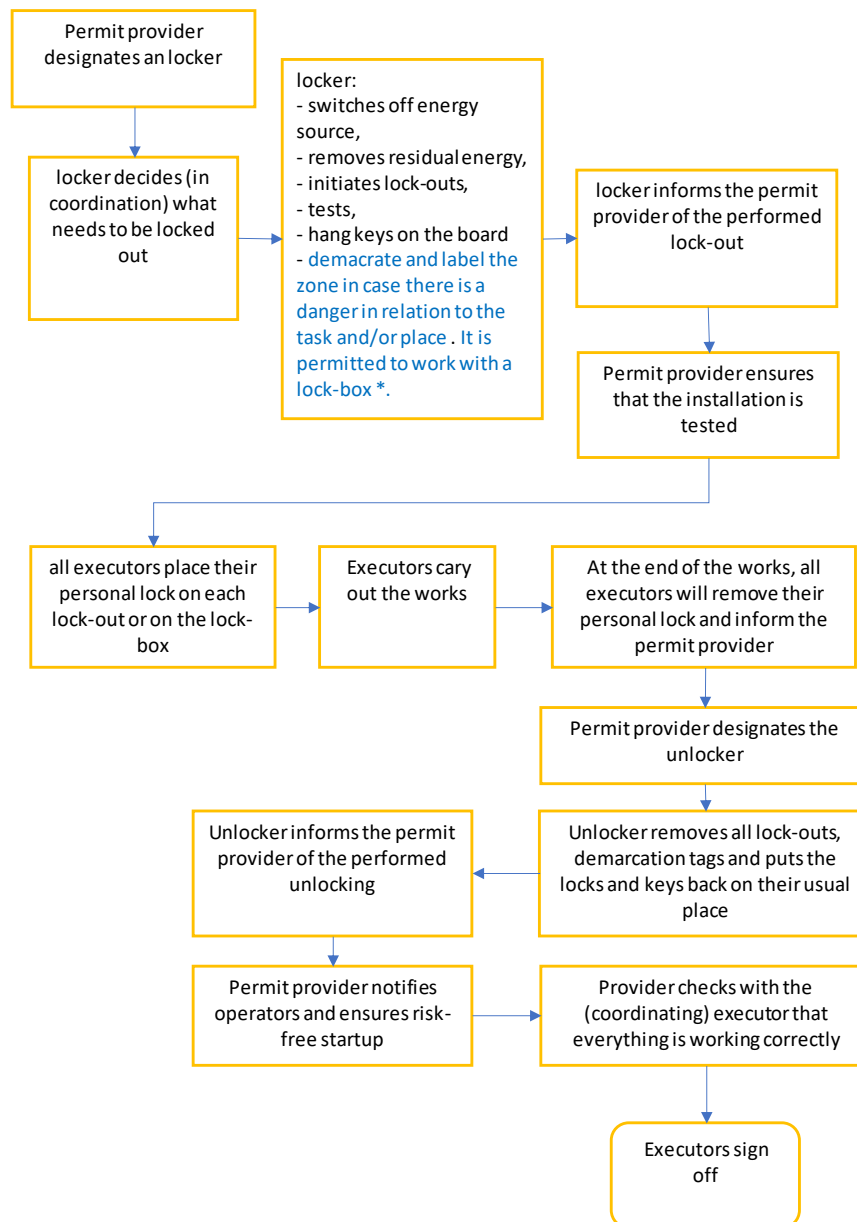
It is generally stated that work may only start once all safety measures have been taken to ensure that there is no danger in any way due to the unforeseen release of energy.

[Before starting work, make sure that the contractor knows the correct installation so that one works on the correct installation. In case of doubt, the executors should be accompanied to the place of the work.](#)

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7.2 Easy locking

7.2.1 Flow



* When using a lockbox, it should be treated as a complex lock with lockingsheet.

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7.2.2 Prior to work in the event of a simple locking

Permit provider

- Indicates a locker and gives him additional explanations about the lockouts to be carried out.
- Discusses with the coordinating executor where the lockouts are or were applied.
- Verifies that the lock has been carried out correctly and that the installation has been tested by the locker.

Locker

- Determines what needs to be locked in consultation with the provider and/or coordinating executor.
- Switches off the energy sources.
- Removes the residual energy present.
- Applies the necessary lockouts.
- Places locks with a unique number traceable to the relevant lock at the lockouts. In the absence of numbered locks, a lock and a label are used.
- Performs a test: the installation or its component must not start!
- Places a zone demarcation with label if required.
- Hangs keys on the locksboard
- Informs the permit provider of the lockouts performed.

(Co-ordinated.) executor(s)

- Discusses with the provider where the lock-outs were applied and places his personal lock(s) on the locking points.
- Ensures that the correct lock has been performed and tests (or has it tested) before placing his personal lock(s).

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7.2.3 After completion of work in the event of a simple locking

(Co-ordinated.) Performer(s)

- Removes his personal lock(s) and informs the permit provider.
- Assures itself together with a production employee that everything works correctly, if possible (transfer to production).

Permit Provider

- Designates a unlocker and gives him additional explanations about the lockouts to be removed.
- Ensures that the (coordinating) contractor has transferred the installation back to production.
- Notifies the operators involved in the restart when the machine or plant is restarted.

Unlocker

- Removes the lockouts, zone demarcation and labels.
- Ensures that the installation can be restarted risk-free and that the installation works correctly and informs the permit provider.
- Place the used production locks and fittings back at the location provided for this purpose.

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7.3 Complex locking

A complex lock applies to the following locks:

- Locking from 4 lockouts
- Cross-departmental lockouts
- At confined spaces
- Defective installations that can pose a danger or installations that are out of service and that can easily be put back into service. Before carrying out an intervention on such installations, it must be ensured that the locking is still intact and energy-free.
- When using a lock-box, even with less than 4 lock-outs
- Working on systems fed by steam, strong acid or base

When performing a complex lock, one must use a locking sheet. This sheet shows the correct working method to secure an installation, as well as the energy sources and the locking equipment.

The locking sheet reads:

- A clear reference to the identification of locking points (work switches, valves,...) Preferably via schemas or photos showing all energy sources and the safe position.
- Specific requirements for testing the installation to ensure that everything is energy-free¹

¹ Requirements for testing the installation are systematically added when the locking sheet is updated

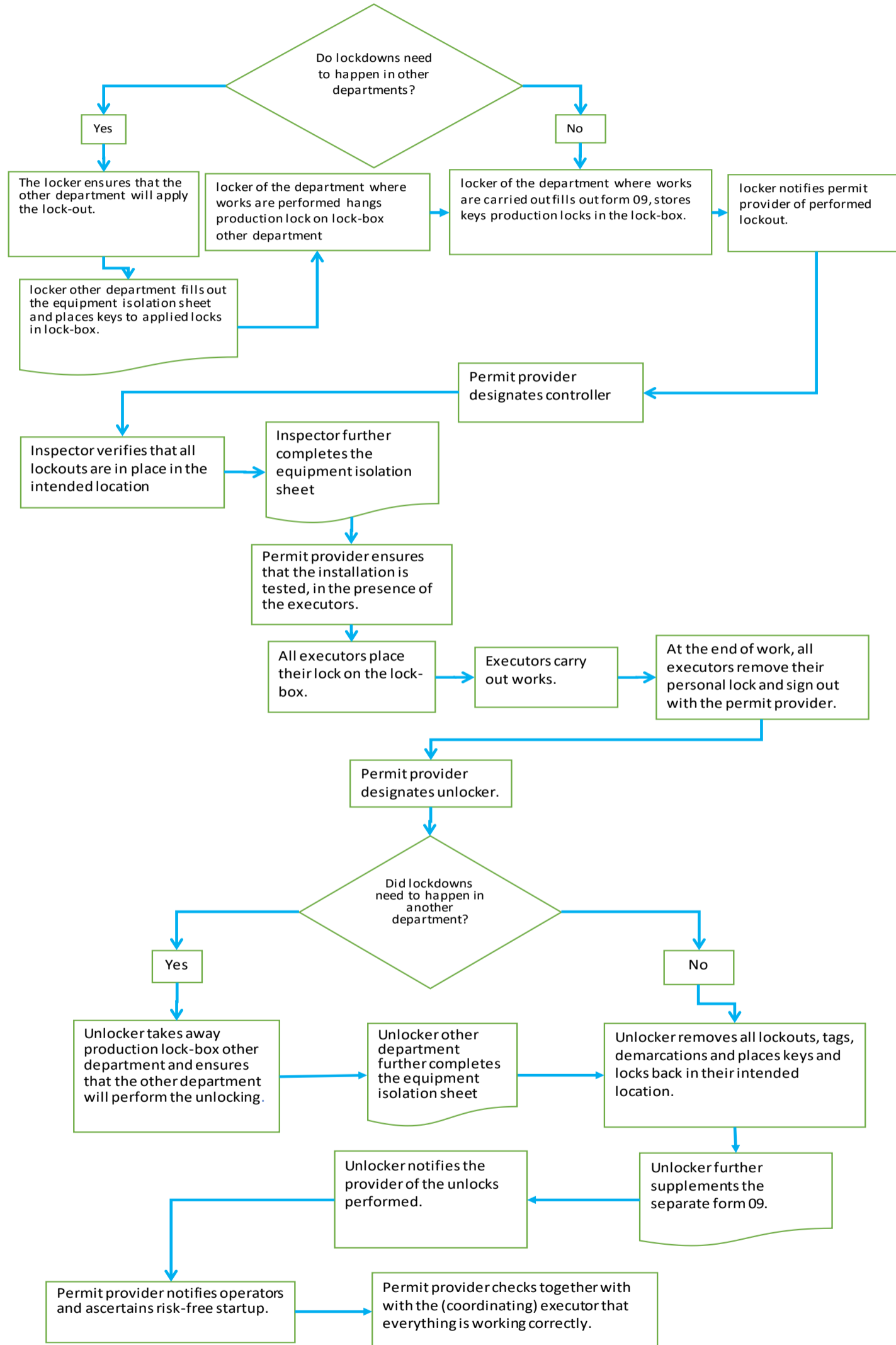
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7.3.1 Flow



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7.3.2 Prior to work in the event of a complex locking

Locking Scheduler

- Determines whether locks should be performed in other departments.
- Provides a locking sheet.
- Verifies, as soon as the final date of the job is known, whether there have been any changes to the installation that are of interest. If this is the case, he will provide a new updated lockingsheet.
- In the case of cross-departmental locks, notify a locker of the other department and clearly communicate what needs to be locked.
- Communicates the final locking sheet to the locker and verifies that the info is clear and understood.
- Instructs the locker to perform the complex lock as soon as the final date of the work is known.

Locker department where works are carried out (1)

- The lock-outs to be carried out with the lockout planner are carried out together with the provider and/or coordinating contractor.
- Sitches off the energy sources.
- Removes the residual energy present.
- Applies the necessary lockouts.
- Places locks with a unique number traceable to the relevant lock at the lockouts. In the absence of numbered locks, a lock and a label are used. Performs a test: the installation or its component must not start!
- Places a zone demarcation with label if required.
- Places a productionlock on the lockbox in the other section (2).
- Places the used keys of the production locks (also those of the other department) in a lockbox. Completes the locking sheet (places its initial on the locking sheet for each item performed).
- Informs the provider of the lock-outs carried out and hands him the completed lockingsheet.
- He can never be the controller of his own locks.

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Locker other department (2) (only in case of cross-departmental locks)

- Switches off the energy sources.
- Removes the residual energy present.
- Applies the necessary lockouts.
- Places locks with a unique number traceable to the relevant lock at the lockouts. In the absence of numbered locks, a lock and a label are used. Performs a test: the installation or its component must not start!
- Places a zone demarcation with label if required.
- Fills in the lockbox of the lockbox in his department.
- The controller carries out checks and completes the locking device.
- Notifies locker (1) where works are being carried out.

Permit provider

- Designates an inspector.
- Verifies that the lock form has been filled in correctly and that the installation has been tested by the locker.
- Insert the lockingsheet at the lockbox and close it with a group lock. The key to the group lock is kept by the department.
- Ensures that the performers apply their personal lock to the lockbox.

Inspector:

- Checks whether all lockouts are or have been applied.
- Place its initials the lockingsheet for each controlled lockout.

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(Co-ordinated.) Performer(s)

- Discusses with the provider where the lock-outs are or were applied.
- Convince yourself that the correct lock has been performed and test it (or have it tested) before placing its padlock. If there are several executors, each must place his personal lock on the lockbox.

7.3.3At the end of the work in the event of a complex locking

(Coordinating) executor(s)

- Removes his personal lock(s) and informs the permit provider.
- Assures itself together with a production employee that everything works correctly, if possible (transfer to production).

Permit provider

- Ensures that the (coordinating) executor has transferred the installation back to production.
- Indicates a unlocker and gives him additional explanations about the lockouts to be removed.
- Notifies the operators involved in the restart when the machine or plant is restarted.

Unlocker

- Remove the group lock from the lockbox and take the keys to the production locks from the lockbox.
- In the case of cross-departmental locks, notify an unlocker from the other department and take the production lock of the lockbox from another department.
- Completes the lockingsheet.
- Removes the lockouts, zone demarcation and labels and places an initial on the lockingsheet for each lockout removed.
- Place the used production locks and fittings back at the location provided for this purpose.

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Unlocker other department (only for cross-departmental locks)

- Completes the lockingsheet.
- Removes the lockouts, zone demarcation and labels and places an initial on the lockingsheet for each lockout removed.
- Ensures that the installation can be restarted risk-free and that the installation works correctly and informs the provider.
- Place the used production locks and fittings back at the location provided for this purpose.

7.4 Production intervention locking

In order to be able to enter installations safely, to remedy malfunctions or to clean them, a trained production employee (competence matrix, level 3) can secure the installation with a simple lock (up to 3 locks) with only his personal locks.

From 4 locks (complex locking) the normal locking procedure with lockbox is used.

7.5 Cross-day work.

If the work is not completed by the end of the day, the executors will remove their personal lock.

It is not necessary that the applied production locks are removed from the equipments. The day on which work is continued, the provider or the inspector, together with the coordinating executor, shall re-test to see whether the lock is secure and shall ensure that the executor(s) apply their personal lock(s).

If the installation cannot be started safely, asset lock (black color) must hang. This lock may only be removed by the manager asset.

7.5.1 Seal

If a complex lock is cross-day, it is necessary to check the applied locks conform the group standard every day. To achieve this objective, there is the possibility to seal the lockbox.

Procedure:

- The sealing tape is affixed to the locked lockbox so that the extension is secured.
 - The unique number on the sealing tape must be noted on the lockingsheet.
- As long as the sealing tape remains intact and is in accordance with the number noted on the lockingsheet, the previously applied lock is valid.

These sealing tapes can be obtained from ATB catalog Manutan article A067305, 1 set is 100 pieces.

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7.6 Temporary removal of locks.

It is possible that during work on an installation one wants to test or reposition a component that forms part of a complex lock. For this, one or more locks will have to be temporarily removed.

The lockcoordinator shall take the following measures for this:

- Inform the provider that they want to remove the latches.
- Have all persons working on the installation in question removed. If necessary, use hazard tape or temporary barriers to delineate a potential danger zone.
- Have all materials and tools removed.
- Have all lockings, blockages, etc. removed.
- Have a statement affixed to the lockboard describing the installation and interlock involved that was temporarily unlocked in order to perform adjustment, testing or positioning work. This declaration shall also state the name of the person coordinating the works.
- At the end of the test, turn off the installation again and insert it back into the complex lock.

If one or more production locks are removed, the validity of the associated work permit and locking sheet expires. A new work permit and locking sheet must be drawn up.

7.7 Remove forgotten lock

If it is found that a executor has forgotten to remove his personal lock and the installation must be put into service; then apply the following method:
Contact the executor to remove his personal lock. If this is not possible:

1. Calling the porters: executor may still be at the company (see badge check).
2. Fill in an application document "[removal of locks](#)"
3. Have this document signed by the production coordinator or superintendent and inform all managers of the relevant service. If none of these 2 people is present to give the written approval, please contact them by telephone. If not approved (in writing or by phone) the lock may not be removed.
4. In the case of a telephone approval, it is required that the application document be signed on return or an email sent by the production coordinator or superintendent.

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7.8 Lock box on location (blue lock-box)

If production decides that a lockbox should be taken outside, they also print the form "Lockbox on site" XF-452-FREC-0-00002 and fill in the necessary information:

- Form XF-452-FREC-0-00002 is hung on the board in the control room under the appropriate section.
- Executors come to the control room and register in the application book with their work permit.
- Operator who takes lockbox outside to make a lock also fills in the equipment on the lockboard with the relevant lockbox number.
- The executors then go with their work permit (which is not yet in order) and their personal lock to the place where they have to carry out their work.
- The 1st operator or team leader is the person who manages the lockbox and the work permit on site. He checks whether the lock is in order, fills in the work permit and releases the installation to start the work.
- The lockbox key will be hung on the lockboard in the control room and the white work permit will be hung on the control room board together with the form "Lockbox on location" XF-452-FREC-0-00002 **or** depending on the department the work permit and lockbox key can go on location and only the form "Lockbox on location" XF-452-FREC-0-00002 remains on the board in the control room.
- The 1st operator or team leader is responsible for hanging and unsubscribing the documents.