

Instruction Lock Out Tag Out Try Out

Scope RWE Generation NL
Department GES-M Central Safety
Next review 01-06-2027

Document information								
Version	Version date		Preparer		Check		Authorisation	
3.5	01-06-2024		S. Potter		T. Adrichem M. Masters R. van Leest		Manager Safety R. Kamst	
Check what applies								
Publication:	<input checked="" type="checkbox"/>	Doc2E	<input checked="" type="checkbox"/>	KMS	<input checked="" type="checkbox"/>	Contractor site	<input checked="" type="checkbox"/>	GCC Connect site
<input type="checkbox"/>	Consent of Works Council (n/a)				Feature:		(n/a)	
Changes compared to previous version								
<ul style="list-style-type: none"> • Periodic review • Life Saving Rule added • Chapters reordered chronologically • Chapter execute Isolation added • Addition preferred way of securing, double block due to practical limitations in systems • Record try-out on LMRA form + LSR electrical Isolation added • In addition to locking tape, magnetic signs are also allowed 								
Purpose instruction								
The main purpose of the LOTOTO instruction is to ensure that equipment cannot inadvertently come into operation and unintentionally release energy/substances during the performance of work.								
Related documents								
Type of document	Title					Code		
Input	Work Clearance Management (WCM)					P001		
Input	Carrying out LMRA					I004		
Input	Instruction Work permits and WCM					I001		
Input	Instruction Task Risk Analysis (TRA)					I002		
Input	Management of electrical installations					I012		
Input	Work instruction for blinding off					I003-001		
Output	Form breaking open of a LOCK-OUT					F003-001		
Output	Site instruction WKC-S Dealing with LOTOTO					Doc No 2016-71544		

Introduction

To secure installation parts that require work, the so-called Lock-out, Tag-out and Try-out principle is used. **Lock-out** is realised within RWE Generation NL using unique locks and key safes, the so-called LOTO boxes. The **Tag-out** is done by means of uniform labels attached to the installation parts at the locks. The **Try-out** is used to check whether an installation part to be worked on cannot be switched on, opened or closed and is free of energy and substances.

By giving the unique key of the LOTO box to the work permit holder, it is ensured that nothing can be changed about the status of the Isolation.

Mission Zero LSR:

"I have made sure I am working on a secure system"



"I comply with electrical safety rules"



Responsibilities

The Operations department is responsible for commissioning and for correctly safeguarding the installation parts. The Isolation operations are performed on the basis of instructions, prepared Isolation lists and P&IDs. The normalisation of the Isolation operations can only be done by or on behalf of the Operations department.

When the work permit is issued, the maintenance department or contractor (work permit holder) is responsible with regard to safety for the relevant installation section, checks the Isolation during the LMRA (see I004) and ensures that no changes are made to the status of the Isolation during the execution of the work. If, as part of the work, tests have to be carried out, which require changes to the Isolation, this can only be done via the Operations department (see also **I001-000 work permits**).

Carrying out Isolation operations

Step-by-step method

Operations establishes that a Isolation is required for a delivered work order.

Operations establishes a Isolation list using a current and coloured P&ID.

Operations monitors the Isolation List in accordance with the 4-eye principle.

After this, Operations instructs an operator to Isolation the plant parts to be decommissioned according to the steps below:

- Safely decommission the systems in the correct order
- Ensure that systems are safely* delivered free of substances and energy that could potentially be released during work activities. Here, pay attention to all types of process substances and energy (pressure, spring, temperature, charge, etc.). **Please also pay attention to controlling risks during flushing!*
- Ensure that components are put into the desired safeguarded state in accordance with the Isolation list;
- Switch off the drive or power supply (electric/hydraulic/pneumatic etc.) to relevant component in accordance with the Isolation list;
- Block the components with a locking lock (lock-out);

Please note, printed paper versions are not managed. Please consult KMS for the current version

- Provide components with a Isolation label (tag-out);
- Perform the 4-eye check (see below "Testing the Isolation");
- Place the keys of the blocking locks together with the Isolation list in the designated LOTO box;
- The permit holder will be given the unique key to the LOTO box when collecting the work permit, and it should remain in his possession the entire time work is being carried out.

If a component is placed in a safe position for several activities at once, as many labels and locks should be attached to this component as there are maintenance order numbers. This prevents a safe position from being terminated while (other) work is still in progress. If hanging multiple locks encounters practical objections, it can also be chosen to nest respective LOTO boxes.

If it is not at all possible to lock an installation part against switching on or operating, a risk analysis (TRA) should define how the risk can be monitored to prevent unwanted state changes.

When interrupting the work for a short (test run) or longer period (end of shift or working day), the LOTO-box key is returned by the holder to the permit office at the same time as the work permit. When the work permit is reissued, it must again be demonstrated that the installation or installation component is still safeguarded.

Determining the absence of voltage (power)

When working on electrical components, as a minimum, de-energisation must be demonstrated. For this, see **I012-001 Operation of Electrical Installations** and Standards to conform to the 5 golden steps of electrical Isolation

1. Switch-off and separate
2. securing against reactivation
3. check whether the electrical installation is de-energised
4. grounding and short-circuiting
5. shield active parts

NOTE: In certain electrical installations, it is necessary to follow a different order.

Determine depressurisation and free of substances

After releasing process systems, depressurisation and substance-free operation should be established as a check. The determination of depressurisation and substance-free operation must always be demonstrable. The preferred method is to visually establish that a pipe/component is or has been depressurised. If it is not possible to deliver a system completely pressureless or free of substances, this can be mentioned on the work permit in the case of low risk. If there is an **increased risk**, a TRA will still have to be drawn up.

If work has to be carried out on a system containing hazardous substances such as chemicals or gases, all such substances must be demonstrably removed. The check before starting work on chemical or gas systems consists of taking samples of the last flushing medium and/or measuring the air quality of the system or room, use **instruction I001-010 Release measurements** for this.

Methods and preferred order of securing

1. **Mechanical Isolation, Disconnection:** making a physical separation to ensure that the components on which work is going to be carried out no longer have, or can possibly have, a connection with the installation parts that are not freely connected;
2. **Blind/pitch flange:** a blind flange serves to seal an open flange connection. A blind flange serves to seal a pipe section and is placed between two adjacent flanges, as close to the

workplace as possible. The material class of blind and connection flanges should be certified for the respective system pressure;

3. **Double Block and Bleed:** free switching of installation (-parts) by closing 2 valves and demonstrably depressurising the intermediate pipe section with an open drain;
4. **Double Block:** Isolation of an installation section with two valves, but where the bleed as a control means is missing and another try-out must therefore take place. Preferably only for very low risk and non-hazardous substances. In other cases, a TRA must be drawn up.
5. **Single Block:** securing installation(s) by closing a single block valve and demonstrably depressurising and maintaining the relevant pipe section with an open connection to the outside air after this valve. In this case, the work falls under increased risk and a TRA should be drawn up.

Electrical disconnection

Electrical Isolation for mechanical work

Electrical release of components for mechanical maintenance only (to the non-electrical components) is done by switch-authorized personnel and by order of the Operational department, in accordance with **I012-001 Operation of Electrical Installations**.

Electrical Isolation for electrical work

If electrical is to be disconnected and separated for electrical work, this will be instructed by the providing department to qualified electrical personnel in accordance with **I012-001 Operation of Electrical Installations**.

Isolation equipment

Locks, keys and Loto boxes (Lock out)

Various types of unique **blocking locks** are possible. The interlocks should be attached to the respective devices in such a way that operation of the device is excluded. If necessary, aids such as chains, cables, caps for handwheels or blocking systems for switches and dip switches are used.

The keys of the blocking locks are stored in a so-called **Loto box**, which is fitted with a lock with a corresponding, unique key.

Isolation tags (Tag out)

Every component, which is placed in a safe position for reasons of work, should have, in addition to a lock, a label showing a unique code, the maintenance order number and the sequence number of the clearance list.

Try-out

Testing the Isolation (Try-out)

The work permit holder also obtains the key to the LOTO box with the work permit.

To make sure that all the free switching actions carried out have led to the desired result, a check must always be carried out, known as the Try Out. This check is performed by the providing department. If necessary, it will be assisted by an E-expert for electrical free switching operations.

	<p align="center">I003-000 LOTOTO</p> <p align="center">Lock Out -Tag Out - Try Out</p>	<p>Instruction: I003-000</p> <p>Doc2E no:2018-42223</p>
---	---	---

The executor of a work order with work permit must satisfy himself of a safely delivered system before starting work on site. This is recorded on the LMRA form.

Normalise

After the work on the installation (-parts) has been completed and the work permit and LOTO box key have been returned by the Holder, the issuing department will remove all labels and interlocks using the Isolation list and P&IDs. Thereafter, orders can be issued to put the plant (-parts) back in operation-ready condition.

After normalisation of the Isolation, the Isolation list is archived together with the work permit by the permit issuer for at least 3 months (can also be digital in SAP).

LOTO lifted under special circumstances


This clipping procedure is used only in highly exceptional cases, and must be authorised by the branch manager or his/her deputy.





If it turns out that the key to a blocking lock or LOTO box is no longer present and it is also impossible to find out where it is, the following procedure should be followed to remove the lock or break open the key box.


1. Determine which lock key (lock number) is involved and to whom it was given;
2. Establish that no one is working on the cleared component anymore and there are no work permits in circulation for these components;
3. All concerned will be informed that this procedure will be applied;
4. Complete form F003-001 "**break open of a LOCK-OUT**".
5. Always have the Operations Team Leader and, in the case of an electrical release, also the installation manager in the context of **I012**, sign for approval to break open the relevant blocking lock or LOTO box. By taking the decision, they also take over responsibility for the related work or installation section;
6. Finally, get the form signed for approval by the branch manager;
7. If the key is from a contractor, fill in a Notification of Abnormal Delivery (MAL) for that contractor firm;
8. Break the lock or key box;
9. Discuss 'cutting' the lock in the morning meeting;
10. The "**break open LOCK-OUT**" form should be filed by the Operations Team Leader.

Terminology & abbreviations


Abbreviation/term	Meaning
-------------------	---------

	I003-000 LOTOTO Lock Out -Tag Out - Try Out	Instruction: I003-000 Doc2E no:2018-42223
---	--	--

Final consumer	Last component in an electrical chain, e.g. an electric motor.
Free circuit tag 	Label attached to a component to indicate that the state of that component should not be changed. On the label, the free switch sticker printed from SAP is attached.  <p style="text-align: right;"><i>Label with (WCM) sticker</i></p>
Operational department	The department responsible for releasing installation parts and issuing work permits (see also I001-000 work permits).
Locking tape 	For locking, <u>in case a lock cannot be placed</u> , special tape or magnetic signs saying "Switching prohibited" may also be used. Like the lock, this indicator must only be fitted and removed by authorised persons. This method of locking must also be accompanied by the Isolation label.
LOTO box (example) 	Safe that can only be opened with a number of safe keys. This safe is used to store the keys of the interlocking locks used to lock components in the installation, together with the original Isolation list/switching plan, after Isolation.
Isolation list	This list specifies the condition that an installation (part) or component must have after a Isolation operation in order to work safely on the system or component.
LOTOTO	Lock-out Tag-out Try-out: this is a safety procedure whereby machines and other power sources are switched off during inspection-maintenance and/or repair work. This procedure should ensure that personnel are protected from the hazards of machinery that may be triggered and other forms of (chemical) energy that may be released unexpectedly.

	I003-000 LOTOTO Lock Out -Tag Out - Try Out	Instruction: I003-000 Doc2E no:2018-42223
---	--	--

Securing- methods and definitions

Complete disconnection	Apply a physical separation to ensure that the components on which work will be carried out no longer have any connection to installation parts that are not safe/ secured.
Blind flange/pitch flange method	A blind flange serves to seal off an open flange. A spade (flange) seals a pipe and is placed between two adjacent flanges as close as possible to the workplace. Blind flanges should be certified for pressure and material class. See also cutting off with blind flanges, I003-001
Double Block & Bleed method	Releasing installation (parts) by closing two valves (placed close to each other) and releasing and maintaining pressure in the pipe section in between with an open drain. This method of Isolation is the safest release method after a blind/ spade flange.
Double Block method	Isolation of an installation section with two valves, but where the bleed is missing as a means of control and another try-out must therefore take place. Preferably only for low-risk and non-hazardous medium
Single-Isolation method	Securing installation(s) by closing a single valve and after this valve pressurising and maintaining the relevant pipe section with an open connection to the outside air.
Mechanical blocking of hydraulically/pneumatically controlled installation (parts). Preventing involuntary movement of parts (driven by medium)	If locking/unlocking of the control medium fails, it will have to be mechanically blocked so that these system(s) cannot move. This also applies to parts that may unintentionally move after removal of drive systems. The mechanical locking should be tested for strength beforehand.
Sewer plugs/ pipe balloons 	Sewer plugs (balloons) can be used to safely switch installation(s) requiring double sealing. The Sewerplug is then usually placed next to an existing valve. This method is applied in cooperation with the maintenance department or a specialised firm.



I003-000 LOTOTO
Lock Out -Tag Out - Try Out

Instruction: I003-000

Doc2E no:2018-42223

Electric Isolation for electrical work	Switching off and lock the main power switch, isolate/disconnect from power supply and secure the isolation. If necessary, earthing of electrical equipment according to I012, so that it is and remains electrically isolated and de-energised.
Electric Isolation for mechanical work	Switching off and securing switches (with locks) to prevent the drive motor or equipment from turning on. Isolation can only be secured by interrupting the main power circuit.
Normalise	Lifting measures taken during Isolation after completion of works. Normally in a reversed way.