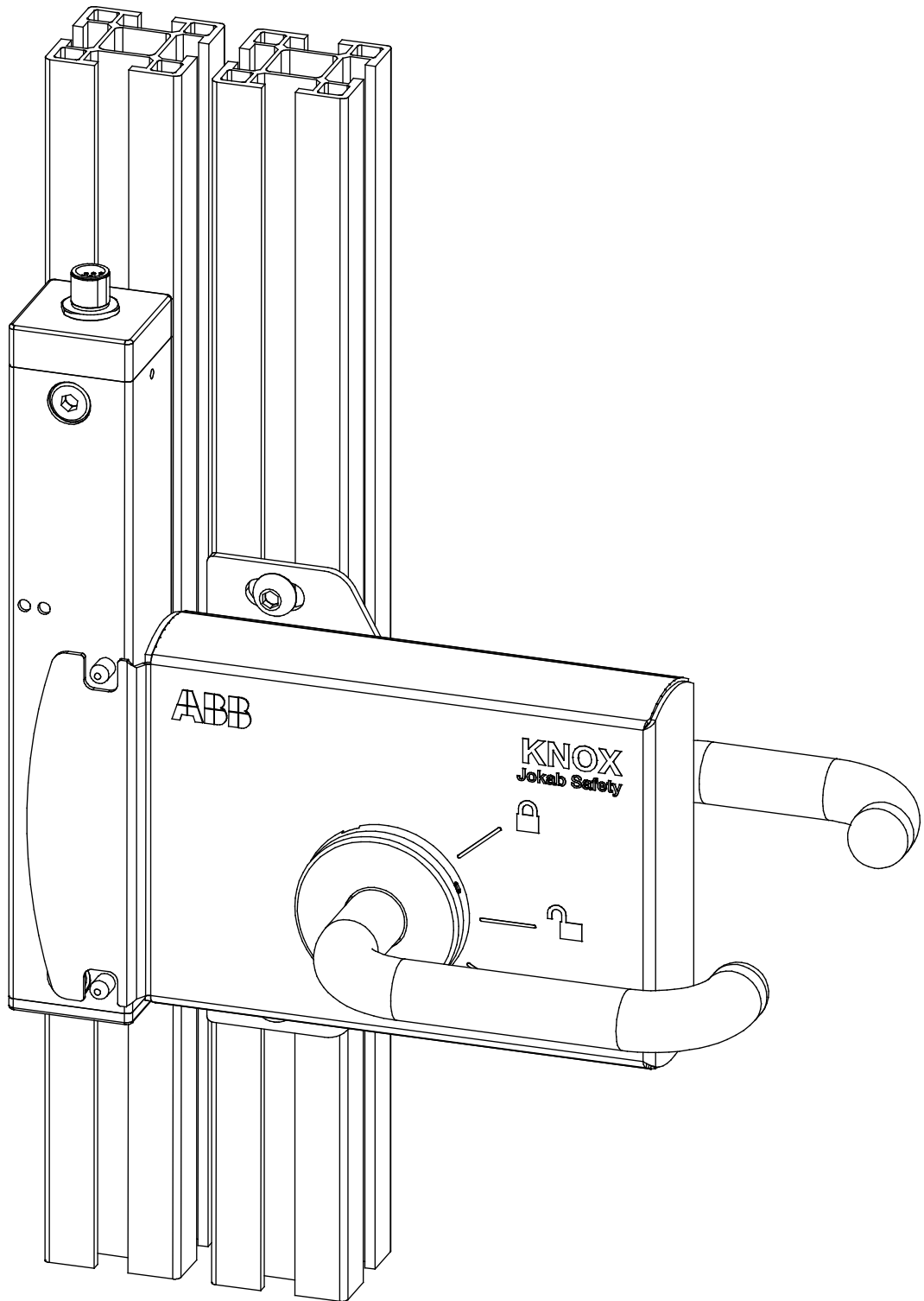


Original instructions

Knox

Safety and process lock



Read and understand this document

Please read and understand this document before using the products. Please consult your ABB JOKAB SAFETY representative if you have any questions or comments.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

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1 Introduction

Scope

The purpose of these instructions is to describe the safety lock Knox and to provide the necessary information required for assembly, installation, checks and adjustments after installation, and maintenance. The instructions also include information necessary to connect Knox to a safety circuit.

Audience

This document is intended for authorized installation personnel.


Prerequisites

It is assumed that the reader of this document has knowledge of the following:

- Basic knowledge of ABB Jokab Safety products.
- Knowledge of safety devices and safety locks.
- Knowledge of machine safety.

Special notes

Pay attention to the following special notes in the document:

 **Warning!** Danger of severe personal injury!
An instruction or procedure which, if not carried out correctly, may result in injury to the technician or other personnel.

Caution! Danger of damage to the equipment!
An instruction or procedure which, if not carried out correctly, may damage the equipment.

NB: Notes are used to provide important or explanatory information.

2 Overview

General description

The safety lock Knox with frame part Knox 2A, is a lock that complies with the highest safety level (two locking bolts with monitored positions) that can be used both as a safety and a process lock. The locking function is electronically controlled and is bi-stable, i.e. it retains its position (unlocked/locked) in the event of a power failure. Connection is made to an 8-pole M12 connector, where dual signals for locking/unlocking are used for safe operation, i.e. no dangerous situation will occur because of short-circuits or cable breakage.

Knox, with frame part Knox 2X, is a process lock with a built in safety sensor to monitor that door is closed and locked. While powered, a single locking signal must be applied to keep the device locked. However, the locking function is bi-stable in case of a power failure, i.e. the lock retains its position (unlocked/locked) if power to the device is cut off. Connections to Knox 2X is made through a 5-pole M12 connector, with a pin configuration which allows connection to an Urax unit for easy connection to the AS-i bus.

The handles operate as they would on a normal door apart from the exterior handle also having a reset function, reducing the need for an extra reset button for this device, and an interior handle that can be used for escape release when the device is in a locked state. Its design and durability makes the device ideal for harsh environments as the sensors in the lock are non-contact and the lock is manufactured out of stainless steel.

Shielded cable is recommended between this unit and the rest of the safety circuit.

Safety regulations

Warning!

Carefully read through this entire manual before using the device.

The devices shall be installed by a trained electrician following the Safety regulations, standards and the Machine directive.

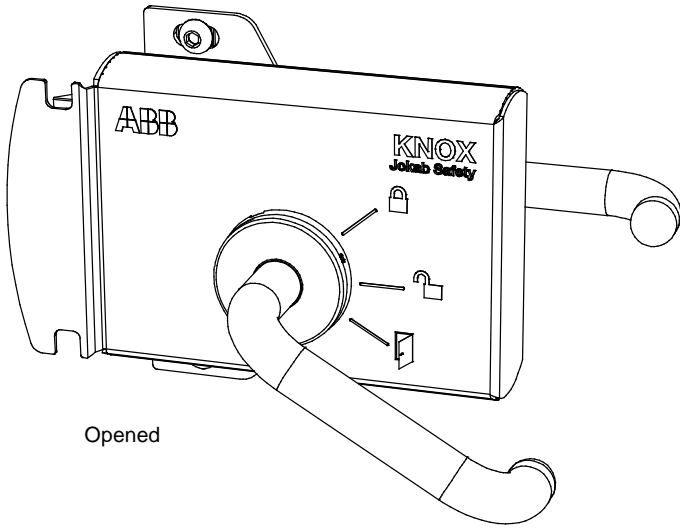
Failure to comply with instructions, operation that is not in accordance with the use prescribed in these instructions, improper installation or handling of the device can affect the safety of people and the plant.

For installation and prescribed use of the product, the special notes in the instructions must be carefully observed and the technical standards relevant to the application must be considered.

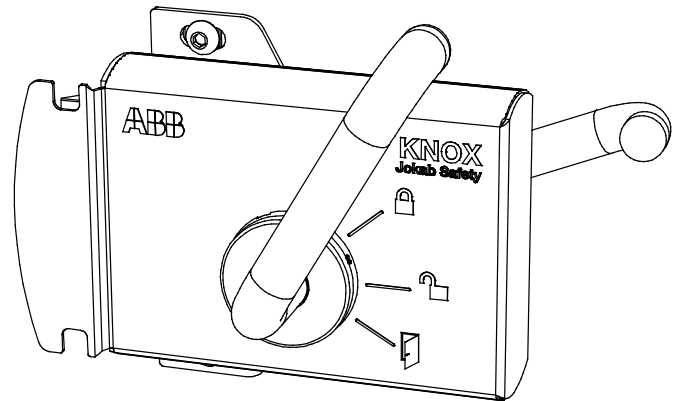
In case of failure to comply with the instructions or standards, especially when tampering with and/or modifying the product, any liability is excluded.

Function description

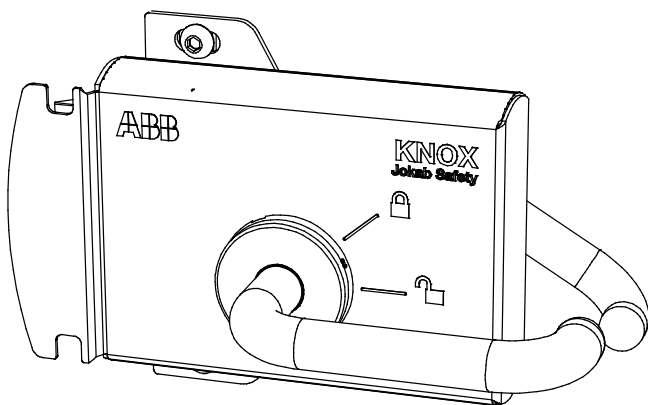
Handle positions



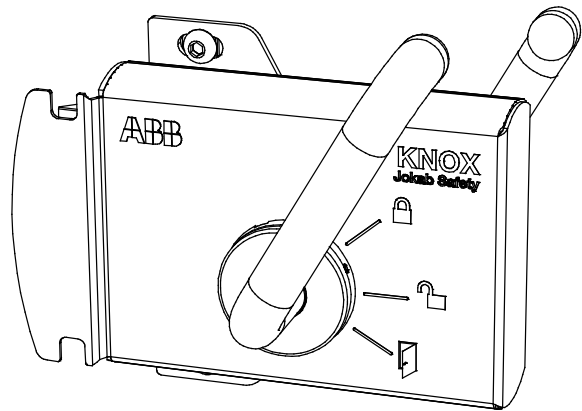
Opened



Reset, openable



Escape released

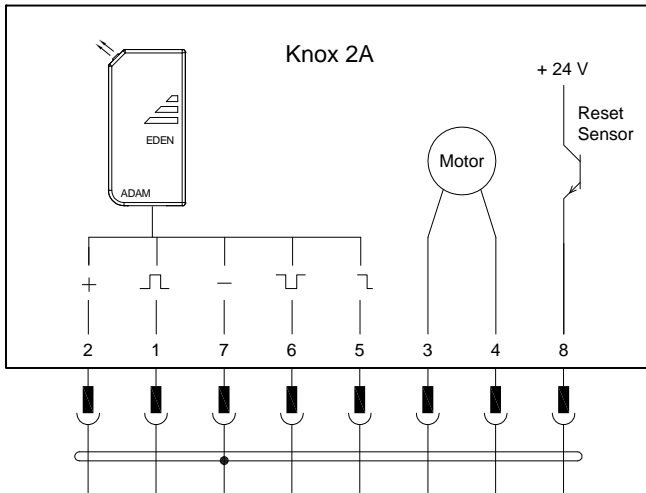


Operational mode, locked and reset

Open	Door open, outer handle pressed down and escape release handle in horizontal position.
Reset, openable	The safety device is reset but the door is unlocked and can be opened from either side. Outer handle in upward position and escape release handle turned upwards slightly from the horizontal position.
Escape release	Door opened by escape release. The door can always be opened from the hazardous area. The door unlocks and the safety circuit is opened when the escape release is pressed down. Independent of the outer handle position.
Operational mode	Door is locked and reset, closing the safety circuit (i.e. allowing a process to start). Both handles on the device are in their upward position. The door can only be opened from the hazardous area (using the escape release handle) causing the process to stop.
Maintenance mode	The two holes in the locking bolts (one on each bolt) are intended for padlocks to be fitted during maintenance work within the hazardous area, as an additional measure to reduce the risk of entrapment.

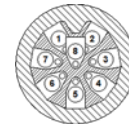
3 Connections

Electrical connections – Knox 2A

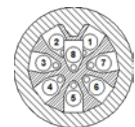


8-pole M12-connector:

- 1) White: Dynamic input signal
- 2) Brown: +24 VDC
- 3) Green: Lock
- 4) Yellow: Lock inverse
- 5) Grey: Information Locked
- 6) Pink: Dynamic output signal
- 7) Blue: 0 VDC
- 8) Red: Information Reset



M12 8-pole male seen from cable side



M12 8-pole female seen from cable side

Caution! All cable colours according to ABB Jokab Safety standard cable.

Locking

The internal motor will lock Knox when supplied with 24 VDC, with pin-3 as the positive pole (+) and pin-4 as the negative pole (-).

The locking signals must be applied for at least 2 seconds or until the dynamic output signal from the Eden sensor is active. There is no maximum time limit; the locking signals may be applied continuously during the time Knox is locked.

Unlocking

The internal motor will unlock Knox when supplied with 24 VDC, with pin-3 as the negative pole (-) and pin-4 as the positive pole (+).

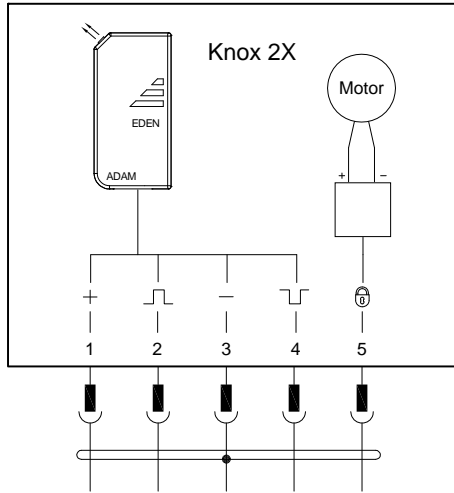
The unlocking signals must be applied for at least 2 seconds. There is no maximum time limit; the unlocking signals may be applied continuously during the time Knox is unlocked.

NB: Knox 2A will retain its locked/unlocked state when power is cut off.

Warning! All information output signals are non-failsafe and must therefore **never** be used to control a safety application. To control a safety application the safe dynamic signals from Eden must be used to determine if a door is locked or not.

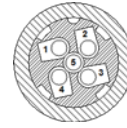
Warning! The system must be connected using a fuse of max 6A.

Electrical connections – Knox 2X

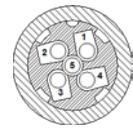


5-pole M12-connector:

- 1) Brown: +24 VDC
- 2) White: Dynamic input signal
- 3) Blue: 0 VDC
- 4) Black: Dynamic output signal
- 5) Grey: Lock (+24 VDC)
Unlock (0 VDC)



M12 5-pole male seen
from cable side



M12 5-pole female
seen from cable side

Caution! All cable colours according to ABB Jokab Safety standard cable.

Locking

The locking signal at pin-5 must be continuously applied (+24 VDC) to keep the device locked. When the locking signal is applied, it may take up to 2 seconds for Knox to fully reach the locked state.

Unlocking

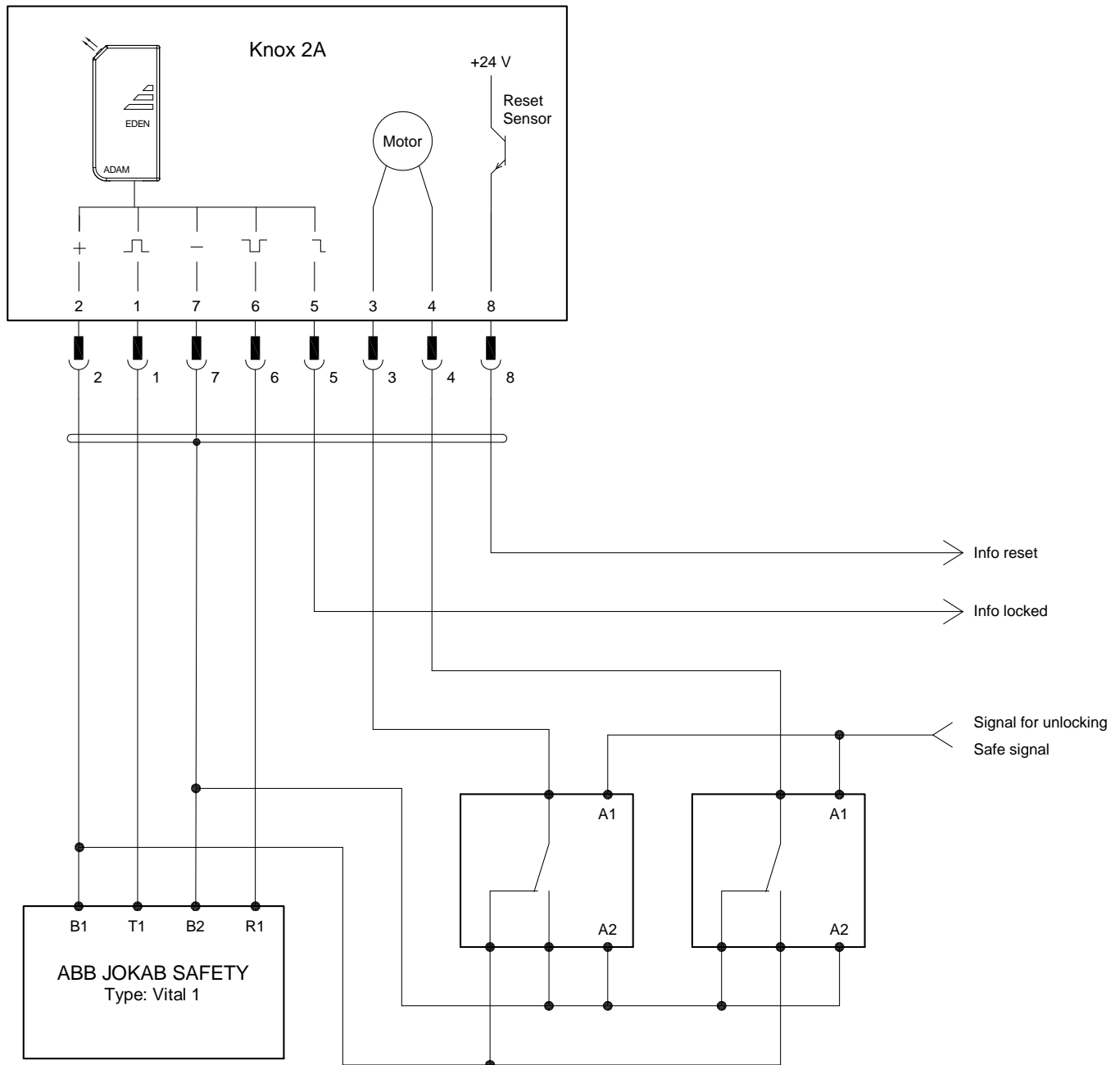
Knox will be unlocked when no locking signal is applied. It may take up to 2 seconds until Knox is unlocked.

NB: Knox 2X will retain locked/unlocked state if the device power supply (pin-1 and -3) is cut off.

Warning! The system must be connected using a fuse of max 6A.

Connection examples

Connection example – Knox 2A with signal for unlocking from other safety system



NB: The info reset signal is HIGH when the outer handle on Knox is set in its upward position.

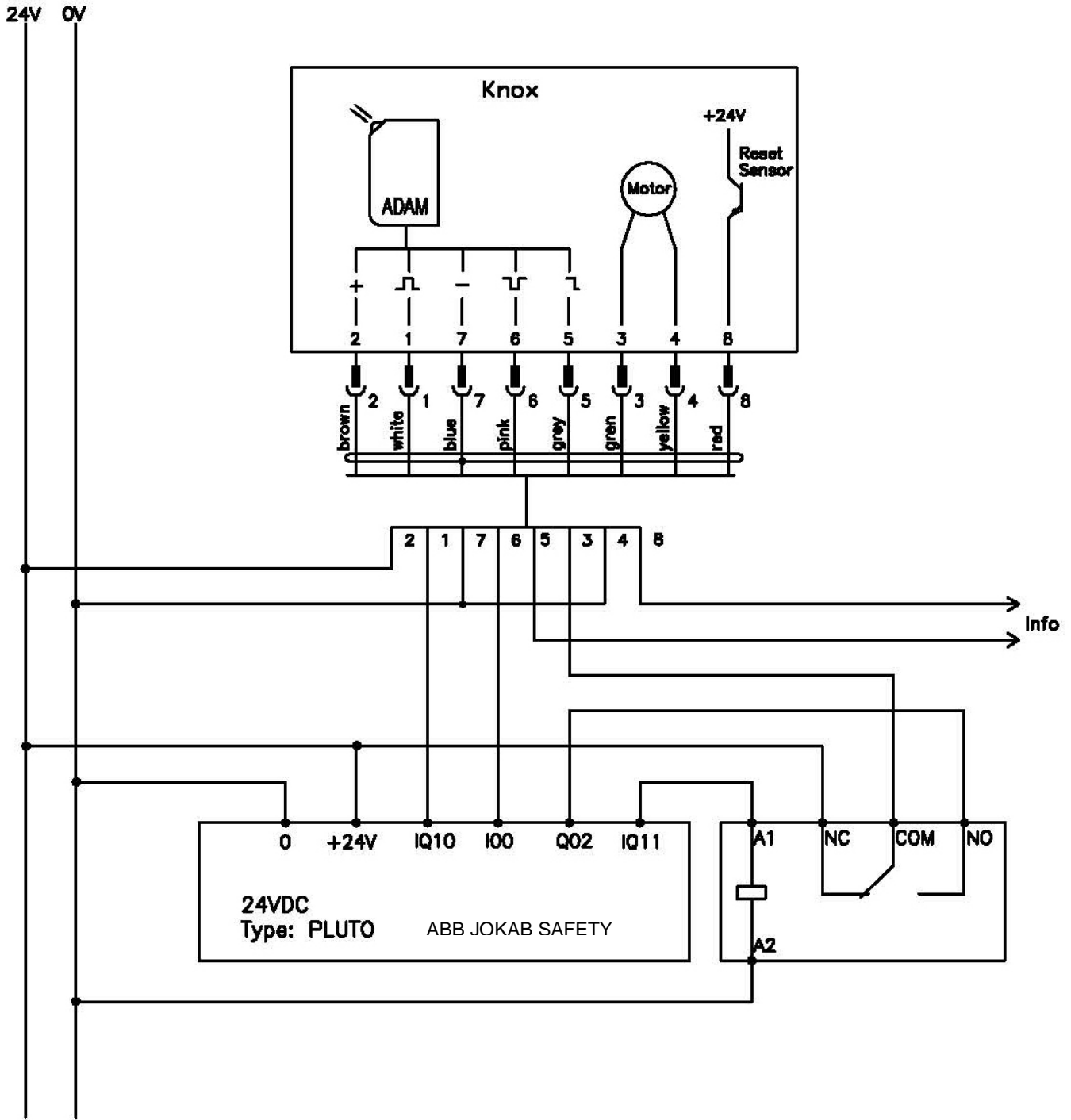
NB: The system will lock Knox if there is no signal for unlocking.

NB: Vital 1 is used to monitor the locking

Warning! The system must be connected using a fuse of max 6A.

Warning! Signal for unlocking must be a safe signal from system in the same enclosure.

Connection example – Knox with locking and monitoring on a Pluto and an extra non-safe relay



NB: The info reset signal is HIGH when the outer handle on Knox is set in its upward position.

⚠ Warning! System must be connected using fuse of max 6 A.

4 Installation and maintenance

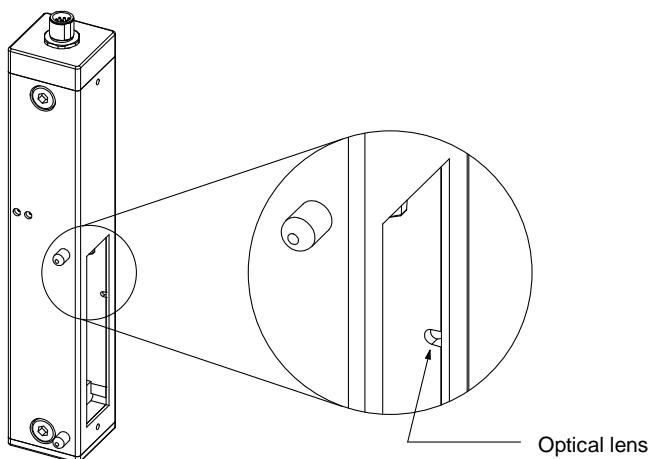
Installation precautions

⚠ Warning! Follow the below instructions carefully to avoid personal injury or damage to the device.

- Knox must be protected from excess current by a fuse of max 6A.
- Knox shall always be mounted with the locking bolts aligned horizontally.
- Never use Knox where the ambient temperature goes below +5° C since icing can disrupt the functions.
- All the safety functions must be tested before starting up the system.
- It must be ensured that the escape release is not possible to reach from outside of the protected area. E.g. by reaching over a door with low height.
- If the built in reset-function (by lifting the outer handle) is used to reset the safety circuit, it must be ensured that it is not possible to reach the handle from inside the protected area. Otherwise a separate reset button must be added to the safety circuit out of reach from inside of the protected area.
- When installing a Knox with possibility to unlock manually from the outside (Knox 1_x), the introduced risk must be considered in the risk analysis. Especially the risk of misuse must be taken into consideration. Routines, adapted to the application, about the use of manual unlock should be prepared. The routines may describe when manual unlocking may be performed and, if necessary, where to store a fitting tool.

Maintenance

- The opening of the frame part should be cleaned regularly.
- In case of dirt indication (flashing LEDs, see *LED indication*); thoroughly clean the two optical lenses at the edge of the frame part opening (see figure).



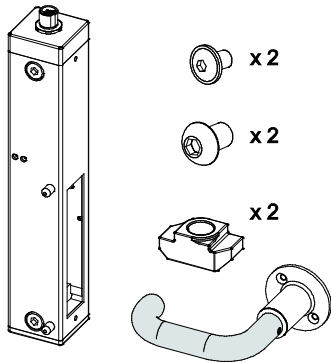
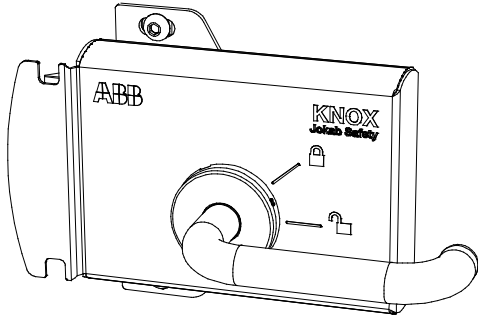
⚠ Warning!

The safety functions and the mechanics shall be tested regularly, at least once every year to confirm that all the safety functions are working properly (EN 62061:2005).

In case of breakdown or damage to the product, contact the nearest ABB Jokab Safety Service Office or reseller. Do not try to repair the product yourself since it may accidentally cause permanent damage to the product, impairing the safety of the device which in turn could lead to serious injury to personnel.

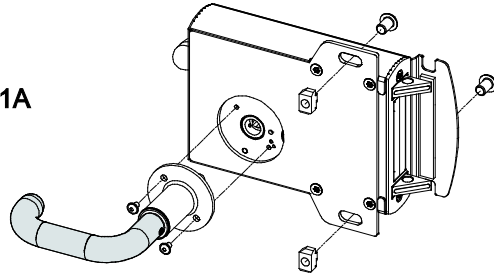
Assembly – conventional door

1

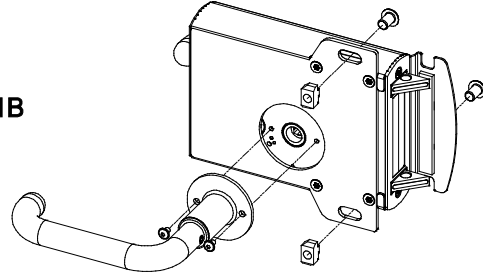


2

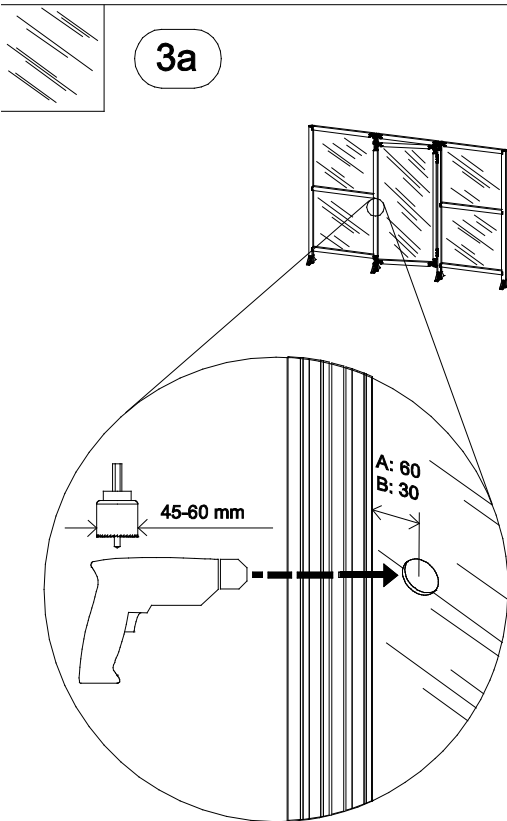
Knox 1A



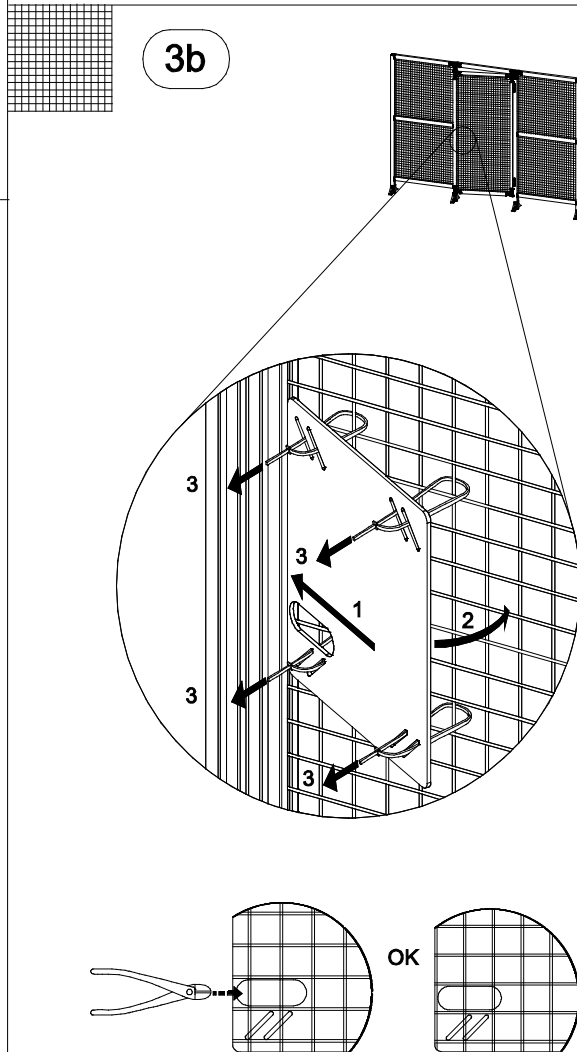
Knox 1B

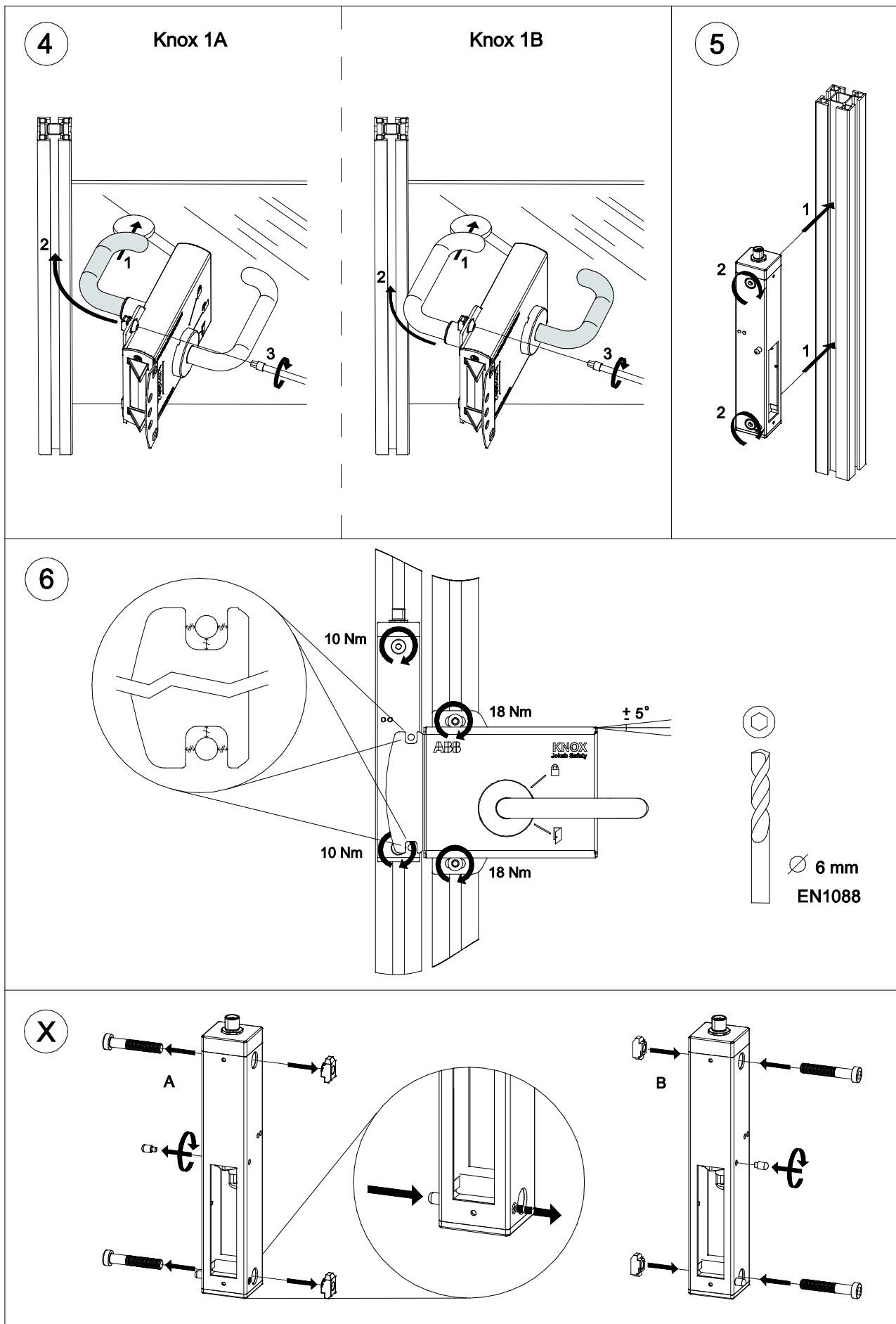


3a



3b





Outward opened, conventional door (Knox 1A, Knox 1AX)

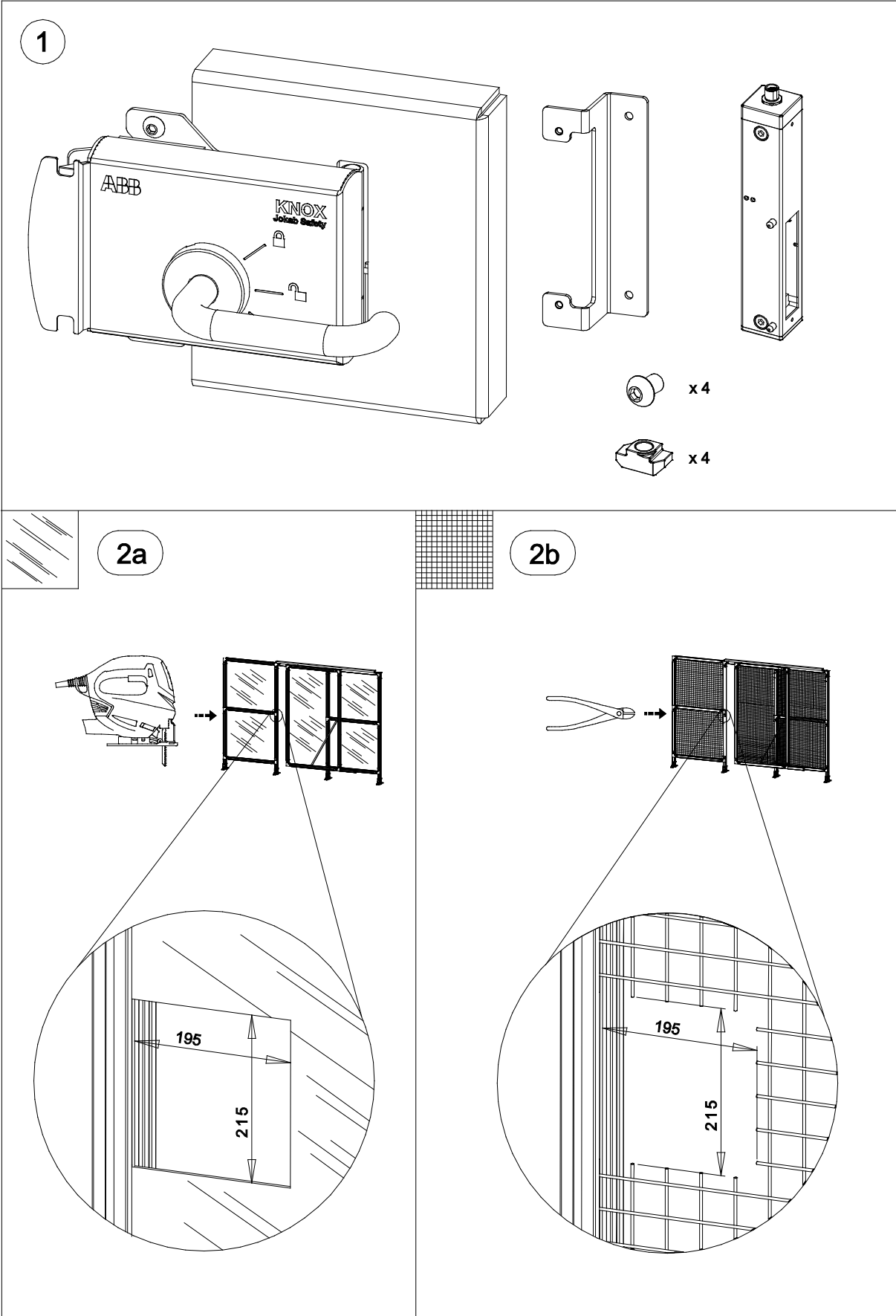
- 1) Component overview.
- 2) Attach and fasten the handle for escape release on the back of the door part. Prepare the door part for mounting on ABB Jokab Safety Quick-Guard system by lightly attaching the mounting nut and screw according to figure 2.
- 3) The type of door determines what step to take.
 - a. If the door surface is completely covered, a hole needs to be drilled for the escape release. The centre of the hole should be **60 mm** from the Quick-Guard aluminium profile (or **104 mm** from the edge of the door). The diameter of the hole should be **45-60 mm**.
 - b. If Knox is to be mounted on a mesh door, an extra PC plate (article number 2TLA020106R0000) can be placed on the mesh to prevent the door from being opened from the outside (using the escape release) or reset from the inside (e.g. by using a screwdriver to push the handle, refer to risk analysis to determine necessity). It might be necessary to cut away a small piece of the mesh to get the handle through, see figure 3b.
- 4) Pass the handle for escape release through the hole to the **back** of the door. Fit the mounting nut to the Quick-Guard profile. Fasten the mounting screws lightly to still be able to adjust position.
- 5) Perform step X) if necessary. Mount the Knox frame part according to figure 5. Make sure that the M12-connector is facing upwards.
- 6) Adjust horizontal and vertical position. Make sure the guiding pins on the frame part are centred in the locating holes on the door part. Fasten the mounting screws with the tightening torque according to figure 6. To comply with safety standard EN 1088 the socket head cap must be drilled if a fitting hex key may be accessible to operators.
- X) At delivery, the frame part is ready for use with a door part for an outward opened door with hinges to the right, or an inward opened door with hinges to the left. If necessary, the frame part can be adjusted to fit the opposite type of door, i.e. an outward opened door with hinges to the left or an inward opened door with hinges to the right. To achieve this, unscrew the upper guiding pin and screw it back in the threaded hole on the opposite side. The lower guiding pin is pushed to the opposite side until the guiding pins are of equal length.

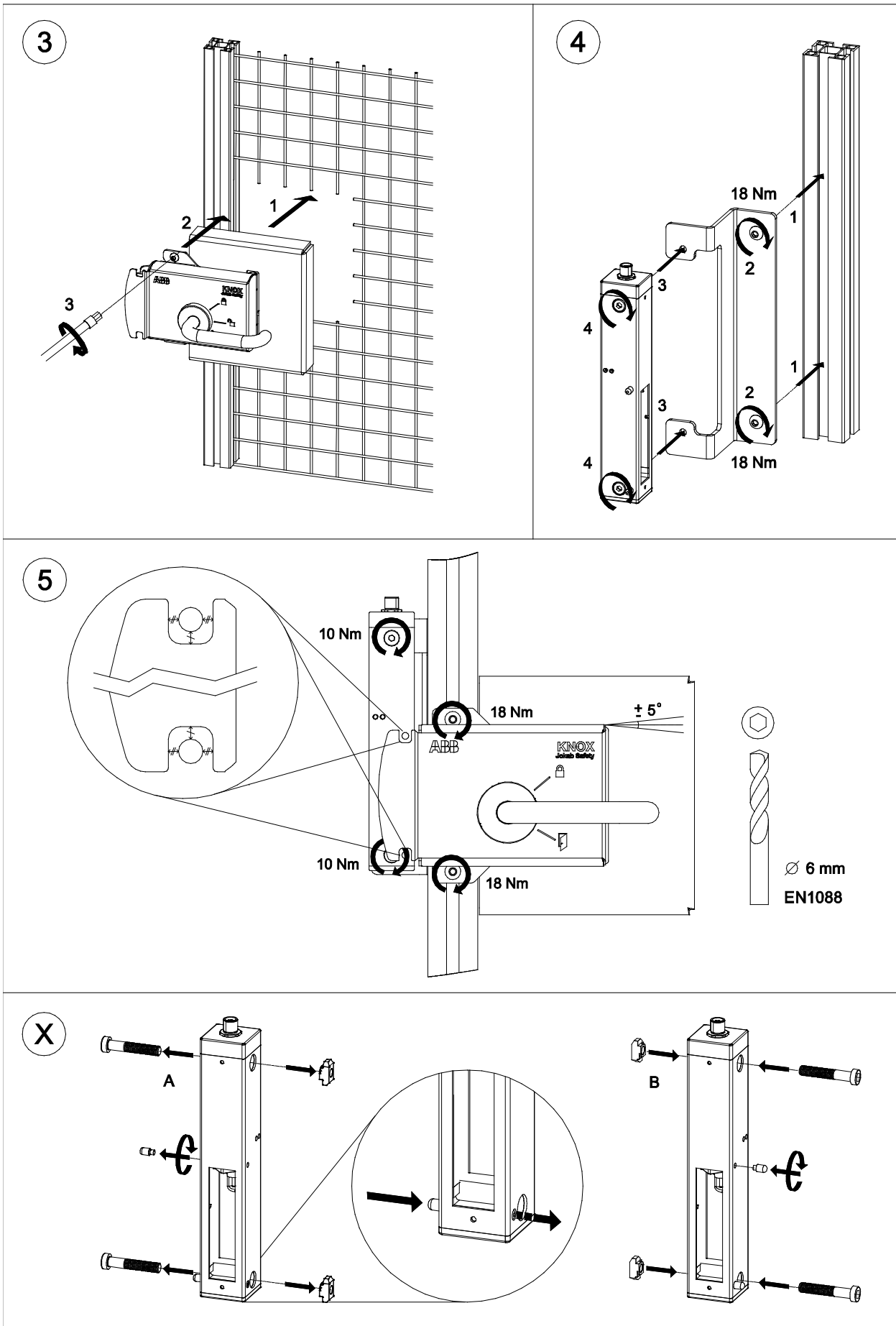
Inward opened, conventional door (Knox 1B, Knox 1BX)

The instructions for an inward (toward hazardous area) opened door use the same illustrations as for an outward opened door. The main difference between the two is that a lock for an inward opened door is mounted on the inside of the door, towards the hazardous area, which is why the handles are different from Knox 1A/-1Ax locks.

- 1) Component overview.
- 2) Attach and fasten the **outer**(silver coloured) handle on the back of the door part. Prepare the door part for mounting on ABB Jokab Safety Quick-Guard system by lightly attaching the mounting nut and screw according to figure 2.
- 3) The type of door determines what step to take.
 - a. If the door surface is completely covered, a hole needs to be drilled for the handle. The centre of the hole should be **25-30 mm** from the Quick-Guard aluminium profile (or **~70 mm** from the edge of the door). The diameter of the hole should be **45-60 mm**.
 - b. If Knox is to be mounted on a mesh door, an extra PC plate (article number 2TLA020106R0000) can be placed on the mesh to prevent the door from being opened from the outside (using the escape release) or reset from the inside (e.g. by using a screwdriver to push the handle, refer to risk analysis to determine necessity). It might be necessary to cut away a small piece of the mesh to get the handle through, see figure 3b.
- 4) Pass the **outer**(silver coloured) handle through the hole from the inside to the **front** of the door. Fit the mounting nut to the Quick-Guard profile. Fasten the mounting screws lightly to still be able to adjust position.
- 5) Perform step X) if necessary. Mount the Knox frame part according to figure 5. Make sure that the M12-connector is facing upwards.
- 6) Adjust horizontal and vertical position. Make sure the guiding pins on the frame part are centred in the locating holes on the door part. Fasten the mounting screws with the tightening torque according to figure 6. To comply with safety standard EN 1088 the socket head cap must be drilled if a fitting hex key may be accessible to operators.
- X) At delivery, the frame part is ready for use with a door part for an outward opened door with hinges to the right, or an inward opened door with hinges to the left. If necessary, the frame part can be adjusted to fit the opposite type of door, i.e. an outward opened door with hinges to the left or an inward opened door with hinges to the right. To achieve this, unscrew the upper guiding pin and screw it back in the threaded hole on the opposite side. The lower guiding pin is pushed to the opposite side until the guiding pins are of equal length.

Assembly – sliding door





Sliding door (Knox 1F, Knox 1FX)

- 1) Component overview.
- 2) An opening of 215x195 mm (HxW) is needed in the door where Knox 1F is to be mounted. The type of door determines what kind of tool that is most suitable. A door with polycarbonate or plate is preferably handled with a jigsaw and an opening in a mesh door is made with small bolt cutters.
- 3) Pass the T-handle handle through the hole to the back of the door. Fit the mounting nut to the Quick-Guard profile. Fasten the mounting screws lightly to still be able to adjust position.
- 4) Perform step X) if necessary. Mount the Knox frame part according to figure 4. Fasten the screws lightly, they should be tightened with the noted tightening torque when the complete lock is accurately in place (after step 5). Make sure that the M12-connector is facing upwards.
- 5) Adjust horizontal and vertical position. Make sure the guiding pins on the frame part are centred in the control holes on the door part. Fasten the mounting screws with the tightening torque according to figure 5. To comply with safety standard EN 1088 the socket head cap must be drilled if a fitting hex key may be accessible to operators.

X) At delivery, the frame part is ready for use with a door part for a sliding door opened to the right. If necessary, the frame part can be adjusted to fit the opposite type of door, i.e. a sliding door opened to the left. To achieve this, unscrew the upper guiding pin and screw it back in the threaded hole on the opposite side. The lower guiding pin is pushed to the opposite side until the guiding pins are of equal length.

 **Warning!**


Knox 1F and Knox 1Fx are intended to fit onto ABB Jokab Safety Quick-guard sliding doors with standard design. In case of other fencing system, special attention must be drawn to fully comply with the installation dimensions to position door-part and frame-part relative to each other.

5 Operation

Locking:

- 1) Remove any padlock in place.
- 2) Close the door.
- 3) Make sure that the hazardous area is clear, then pull outer handle upwards to reset the safety device.
Door locking according to safety-PLC-program.
- 4) Knox is locked when the escape release handle is in upward position and the outmost LED on the frame part lights green.

NB: It may take up to 2 seconds for Knox to fully reach the locked state after the locking signal has been applied.

 **Warning!** It is imperative that the person resetting the safety device confirms that the hazardous area is clear before resetting the safety device.

Unlocking:

- 1) Wait until the safety monitor acknowledges that the hazardous process has stopped (required for safety lock).
Door unlocking according to safety-PLC-program (or directly by output signal from a standstill monitor, for example).
The escape release handle is released from the upper position and the outmost LED on the frame part lights red when the door is unlocked.
- 2) Press the outer handle down and open the door.

NB: It may take up to 2 seconds for Knox to completely lock/unlock when the signal is sent. However, using the escape release handle will unlock Knox mechanically and is instant.

Caution! Never try to force the lock as it can cause permanent damage to the product. Knox is by design equipped with a shear pin on the inside of the handle shaft, which is intended to break before any safety critical part is damaged.

Escape release:

Knox 1A, -1Ax, -1B, -1Bx:

- 1) Press the red escape release handle down and open the door.
Meanwhile, a stop signal will be generated and the hazardous process will be stopped.

Knox 1F, -1Fx:

- 1) Turn the escape release handle in the direction where upper part of handle moves in the direction of door opening. While holding the handle turned, push handle outward and slide the door to open.

Auxiliary release (Knox 1Ax, -1Bx, -1Fx):

- 1) Remove the seal.
- 2) Insert a 4 mm hex key and turn for unlocking. Turn clockwise on Knox 1_-R and turn counter-clockwise on Knox 1_-L. I.e. rotate the hex key in the same direction as the handle is turned when opening.
- 3) Press the outer handle down and open the door.
- 4) When finished, investigate the cause for using manual unlocking and replace the seal with a new one.

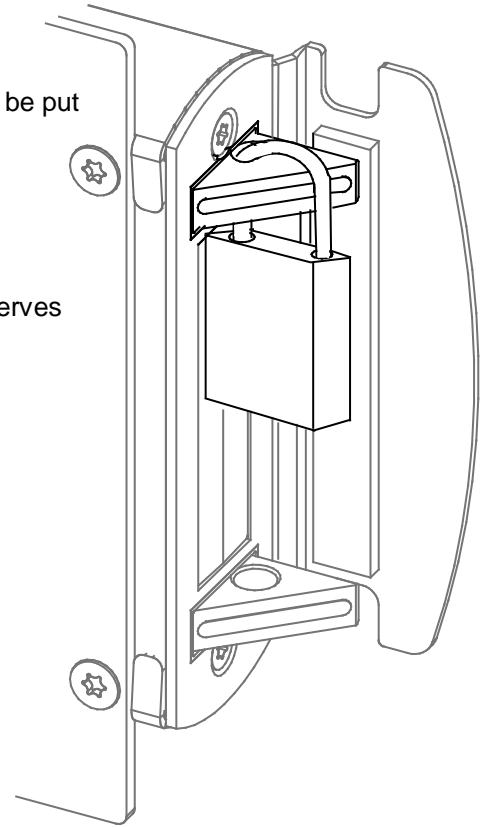
Warning!

It's imperative to follow any additionally routines regarding manual unlocking that has been developed by the machine builder or the user to avoid residual risks associated with manual unlocking and also routines for resetting into normal operation afterwards.

Maintenances mode

If any work is to be carried out inside the hazardous area, a padlock can be put in place in any of the two locking bolts to prevent the door from locking. This can also act as an indication of presence within the hazardous area (only helpful if operators are informed of the use of padlocks).

Warning! The use of padlocks is **not** a part of the safety function and only serves as an additional measure to reduce the risk of entrapment.



LED indication

LED description	LED	Indication	Description
	LED 1	Green	Locked (and reset)
		Green-Red (flash)	Locked, no dynamic signal in
		Red	Unlocked
	LED 2	Green	Reset
		Green-Pause-Green (flash)	Reset (dirt indication)
		Red	Not reset
		Red-Pause-Red (flash)	Not reset (dirt indication)
	Frame part – left	Frame part - right	

6 Model overview

All Knox part model names are built up using numbers and letters according to:

Door part: **Knox 1** X Y - Z

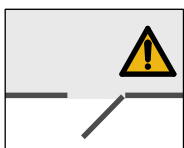
Frame part: **Knox 2** W

Device	Position	Designation	Description
Door part Knox 1	X	A	For outward opened doors
		B	For inward opened doors
		F	For sliding doors
	Y		Standard version
		X	Manual unlocking possible from the outside
	Z	L	For doors with hinges to the left
R		For door with hinges to the right	
Frame part Knox 2	W	A	Safety lock with 8-pin M12 connector
		X	Process lock with 5-pin M12 connector

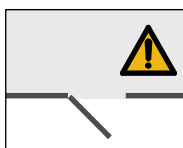
Available models

Type	Article number	Description
Knox 1A-R v2	2TLA020105R5000	Door part. For outward opened door with hinges to the right.
Knox 1A-L v2	2TLA020105R5100	Door part. For outward opened door with hinges to the left.
Knox 1B-R v2	2TLA020105R5200	Door part. For inward opened door with hinges to the right.
Knox 1B-L v2	2TLA020105R5300	Door part. For inward opened door with hinges to the left.
Knox 1AX-R v2	2TLA020105R5800	Door part with manual unlocking. For outward opened door with hinges to the right.
Knox 1AX-L v2	2TLA020105R5900	Door part with manual unlocking. For outward opened door with hinges to the left.
Knox 1F-R v2	2TLA020105R6000	Door part. For sliding door opened to the right.
Knox 1F-L v2	2TLA020105R6100	Door part. For sliding door opened to the left.
Knox 1BX-R v2	2TLA020105R6200	Door part with manual unlocking. For inward opened door with hinges to the right.
Knox 1BX-L v2	2TLA020105R6300	Door part with manual unlocking. For inward opened door with hinges to the left.
Knox 1FX-R v2	2TLA020105R6400	Door part with manual unlocking. For sliding door opened to the right.
Knox 1FX-L v2	2TLA020105R6500	Door part with manual unlocking. For sliding door opened to the left.
Knox 2A v2	2TLA020105R2200	Frame part. For safety lock. 8-pin M12 connector.
Knox 2X v2	2TLA020105R2300	Frame part. For process lock. 5-pin M12 connector.

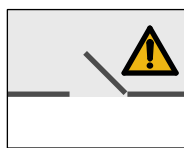
Door types suitable for Knox



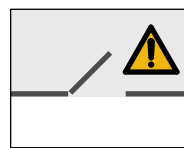
Conventional door
Outward opened,
hinges to the right



Conventional door
Outward opened,
hinges to the left



Conventional door
Inward opened,
hinges to the right



Conventional door
Inward opened,
hinges to the left



Sliding door
Opened to the right

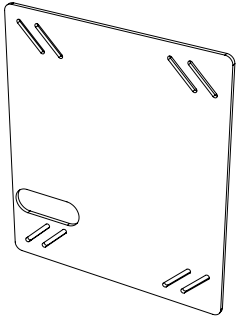


Sliding door
Opened to the left

Accessories

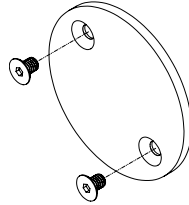
Type	Article number	Description
Accessory	2TLA020106R0000	PC plate for mesh door mounting.
Accessory	2TLA020106R0600	Escutcheon plate (cover plate) to fit instead of escape release. Used to avoid access from outside, e.g. when Knox is mounted on low guards.
Spare part	2TLA020106R0800	Shear-pin for Knox1A and Knox1F outer handle
Tina 12A	2TLA020054R1800	Distribution block for two Knox.
Urax A1	2TLA020072R0000	Adaptation device for connection to the AS-i bus through 5-pole M12 connector. 1 safe input node and 1 non-safe output.
Urax B1R	2TLA020072R0200	Adaptation device for connection to the AS-i bus through 5-pole M12 connector. 1 safe input node and 3 non-safe outputs. Connector for local reset button.

NB: Only Knox 2X can be connected to an Urax adaptation device for connection to the AS-i bus.



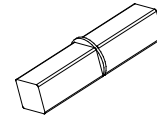
PC plate for mesh door mounting.

Article number:
2TLA020106R0000



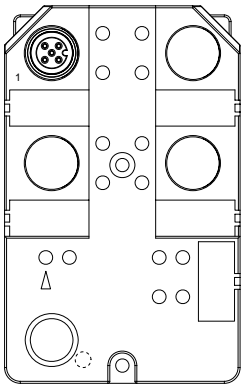
Escutcheon plate (cover plate) to fit instead of escape release handle.

Article number:
2TLA020106R0600



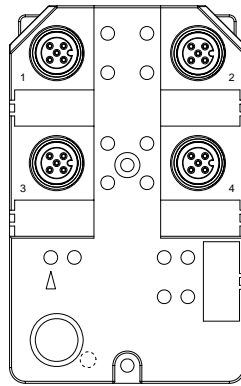
Knox shear-pin

Article number:
2TLA020106R0800



Urax A1
1 safe input node and 1 non-safe output.

Article number:
2TLA020072R0000



Urax B1R
1 safe input node and 3 non-safe outputs.
Connector for local reset button.

Article number:
2TLA020072R0200

The Jokab Safety branded product with article number beginning with 2TLJ is fully compatible with the ABB branded product with article number beginning with 2TLA.

7 Technical data

Manufacturer

Address ABB JOKAB SAFETY
Varlabergsvägen 11
SE-434 39 Kungsbacka
Sweden

Power supply

Operating voltage 24 VDC \pm 10 %

Power consumption	Knox 2A Electronics: 70 mA (in locked position) Lock/lock inverse: 135 mA (when locking/unlocking) Information output: Max 10 mA Total max: 160 mA	Knox 2X Electronics: 150 mA Lock: 5 mA (when locking/locked) Information output: Max 10 mA Total max: 165 mA
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Time delay t (in/out Eden) t < 60 μ s

General

Protection class IP65

Ambient temperature +5...+55°C

Size See drawing

Holding force (in opening direction) Unlocked: 5,000 N (10,000 N ultimate breaking strength)
Locked: 5,000 N (10,000 N ultimate breaking strength)

Lock function Knox 2A: S/M – bistable, unlocked and locked with voltage
Knox 2X: M – internal locking electronics; locked when signal is applied, unlocked otherwise (bistable at power failure)

Weight Door part: ~ 3.14 kg
Frame part: ~ 0.79 kg

Material Stainless steel

Colour Silver

Connector Knox 2A: M12 8-pole male
Knox 2X: M12 5-pole male

Mechanical life 10^5 cycles

EMC EN 62061:2005, Annex E

Vibration resistance in 3 directions (according to IEC 60068-2-6) 10-59 Hz, 0.7 mm P-P
59-500 Hz, 5 g
10 sweep cycles, 1 oct/min

Shock resistance in 3 directions (according to IEC 60068-2-27) 15 g, 11 ms half sine
 \pm 3 shocks

Warning! Knox locks mechanically. Forcing the lock may damage Knox permanently.

Safety / Harmonized standards

Conformity

European Machinery Directive 2006/42/EC



EN ISO 12100-1:2003+A1:2009, EN ISO 12100-2:2003+A1:2009, EN 954-1:1996/EN ISO 13849-1:2008, EN 1088+A2:2008, EN 60204-1:2006+A1:2009, EN 61000-6-2:2005, EN 61000-6-4:2007

EN ISO 13849-1

Performance level: PL e, Category 4

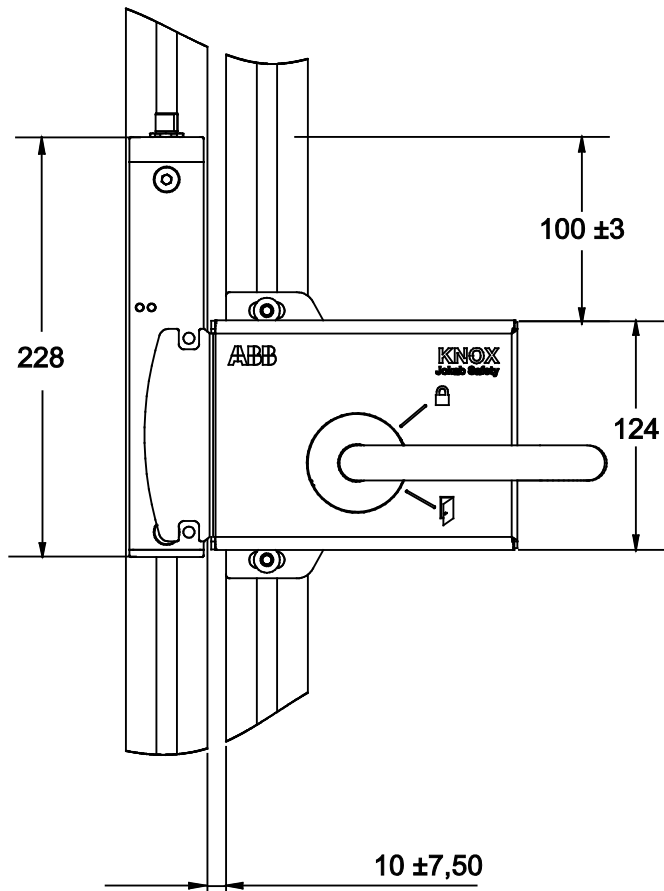
MTTF_d: 150 years

Certifications

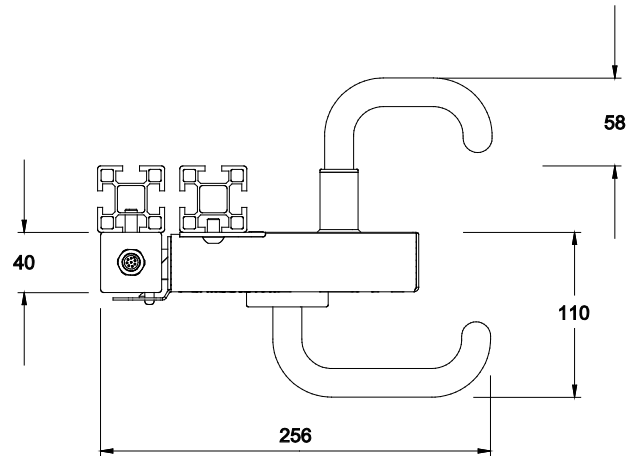
IntertekSemko

Dimensions

Knox 1A + Knox 2A/X

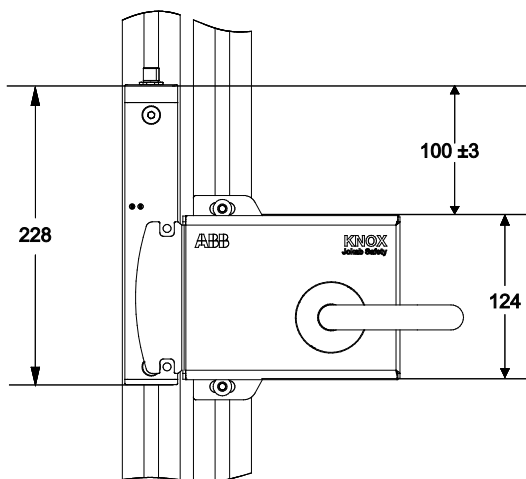


Front view
Knox 1A-R + Knox 2A

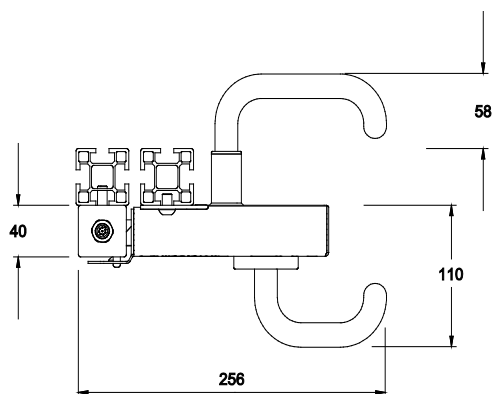


Top view
Knox 1A-R + Knox 2A

Knox 1B + Knox 2A/X

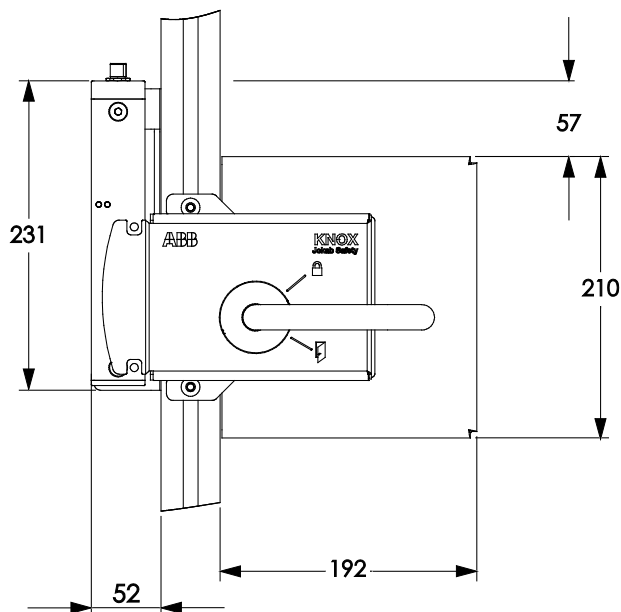


Front view
Knox 1B-L + Knox 2A

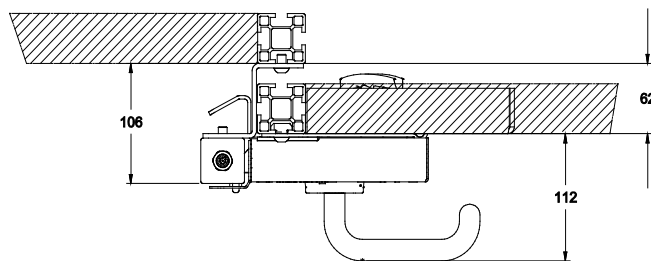


Top view
Knox 1B-L + Knox 2A

Knox 1F + Knox 2A/X



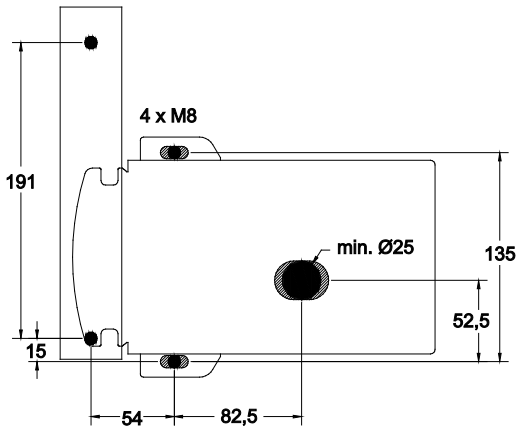
Front view
Knox 1F-R + Knox 2A



Top view
Knox 1F-R + Knox 2A

Hole pattern

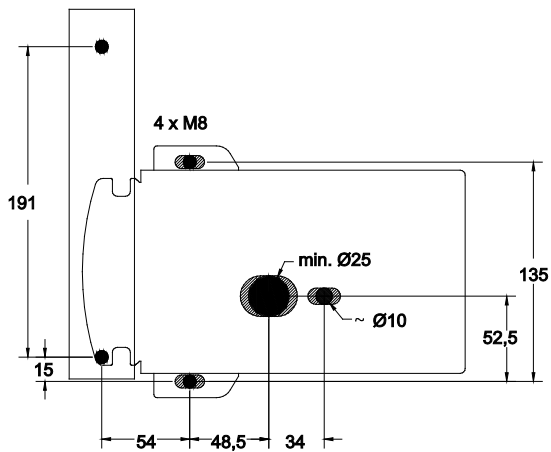
Knox 1A + Knox 2A/X



Front view
Knox 1A-R + Knox 2A/X

Fixation holes and hole through door for escape release handle

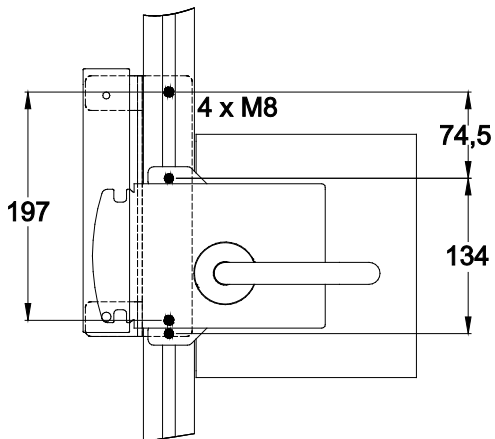
Knox 1B + Knox 2A/X



Front view
Knox 1B-L + Knox 2A/X (without $\varnothing 10$ mm hole)
or
Knox 1BX-L + Knox 2A/X (with $\varnothing 10$ mm hole)

Fixation holes and hole through door for handle
(Knox 1BX: 10 mm hole through door for auxiliary opening)

Knox 1F + Knox 2A/X



Front view
Knox 1F

Holes for frame part in post behind.
Holes for door-part in post in front.

NB: All measurements in millimetres.


8 EC Declaration of conformity



EC Declaration of conformity

(according to 2006/42/EC, Annex 2A)

We	ABB AB JOKAB Safety Varlabergsgatan 11 SE-434 39 Kungsbacka Sweden	declare that the safety components of ABB AB manufacture with type designations and safety functions as listed below, is in conformity with the Directives 2006/42/EC 2004/108/EC
Authorised to compile the technical file	ABB AB JOKAB Safety Varlabergsgatan 11 SE-434 39 Kungsbacka Sweden	
Product	Certificate	
Knox 2A v2, safety lock including non contact safety interlocking sensor	1209845	
Knox 2X v2, process lock including non contact safety interlocking sensor	1215559	
Certification body	INTERTEK SEMKO AB Box 1103 SE-164 22 KISTA Sweden	
Used harmonized standards	EN ISO 12100:2010, EN ISO 13849-1:2008, EN 1088+A2:2008, EN 60204-1:2006+A1:2009, EN 61000-6-2:2005, EN 61000-6-4:2007	



Jesper Kristensson
PRU Manager
Kungsbacka 2012-12-11

www.abb.com
www.jokabsafety.com

Original

ABB JOKAB SAFETY Varlabergsvägen 11, SE-434 39 Kungsbacka, Sweden

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