

Non-destructive technology for
in-field wood pole
inspections

Polux[®] 5
user guide





OVERVIEW

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Field of application

Polux technology is exclusively calibrated for in-field wood pole inspections.

Warning

The user guide does not replace in any case the specific training given by a licensed trainer.

Liability

Results obtained with the Polux technology are under the user's responsibility.
Polux is a tool for an educated inspector in order to deliver a diagnostic on the quality of an in-field wooden pole.
The supplier declines any liability on a diagnostic given by a third party.

Guarantee

Without any additional specific mention, Polux guarantee runs during one (1) year following the delivery date (accessories excluded).

Calibration

The Polux device is a measuring tool. A yearly calibration is strongly recommended.

Storage

When the Polux device is not in service, it is recommended to remove the battery.
Concerning long term storage, the following conditions are advised:

- No humidity or moisture
- Ventilated area
- No direct sunlight exposure
- Storage temperature: 10°C – 30°C (50°F – 85°F)
- Battery removed

Certified accessories

Polux must be strictly used with certified accessories, and declared as such by the supplier, and especially:

- Battery
- Measuring pins
- Fixing screw

The utilization of non-certified accessories can be dangerous, create irreversible damage to the equipment and lead to erroneous results.

The supplier cannot be held as responsible if non-certified accessories are used with the Polux device. The use of non-certified accessories voids all product guarantees.

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1. Introduction to the device

1.1 Introduction

Polux technology has been entirely developed for in-field wood poles quality assessment.

Polux 5 is the fifth generation of Polux devices.

Though the metrology is similar to the previous generations of devices, the measurement process is now completely automatized.

Polux 5 concept is:

- Secure the device on the pole via a screw (screwing process)
- Send measuring pins into the wood
- Retract measuring pins from the wood
- Free the device from the pole (unscrewing process)

If, during the screwing process, Polux 5 considers the wood strength is not strong enough to send the measuring pins into the wood, this step will be automatically cancelled and the unscrewing process to release the device from the pole will be launched.

Polux 5 does not show the results on its own display. Data are stored within the Polux and transferred via Bluetooth to a handheld computer using Picus* to analyze them and express the diagnostics.

If Polux 5 is very easy to use, the interpretation of the results is strictly reserved to trained persons on both: Polux technology and in-field wood pole concerns.

This user guide does not replace any training given on the Polux 5 by qualified trainers.

** Picus: data collection software for handheld computer to analyze Polux 5 results.*

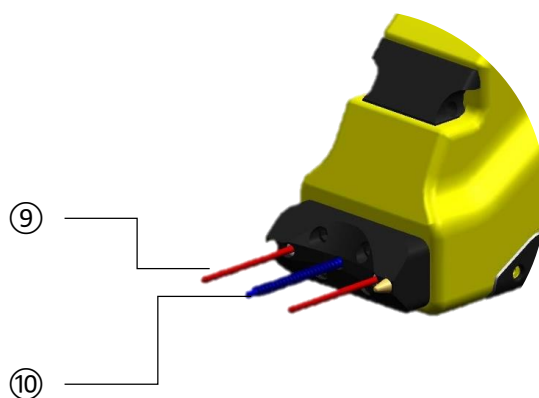


1. Introduction to the device

1.2 Overview



- ① Front plate
- ② Front plate locker
- ③ Front hook for carrying belt
- ④ Display
- ⑤ Back hook for carrying belt
- ⑥ Trigger
- ⑦ Handle
- ⑧ Battery housing
- ⑨ Measuring pins
- ⑩ Fixing screw

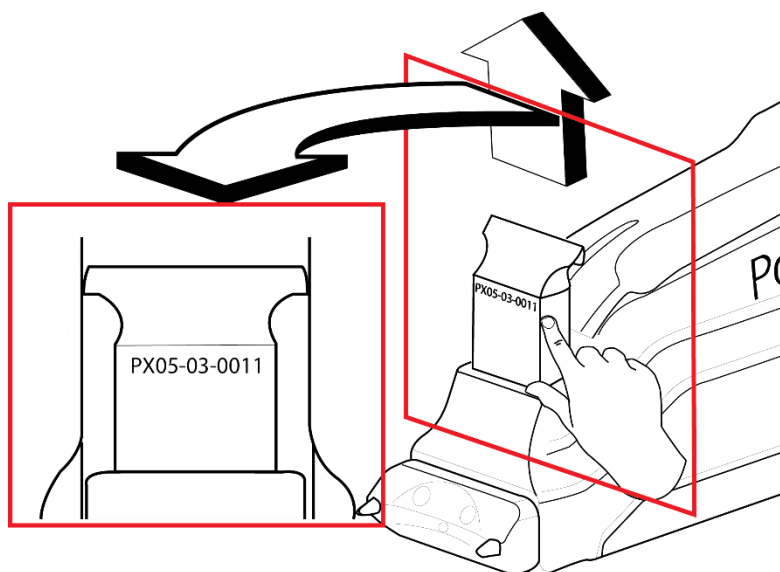
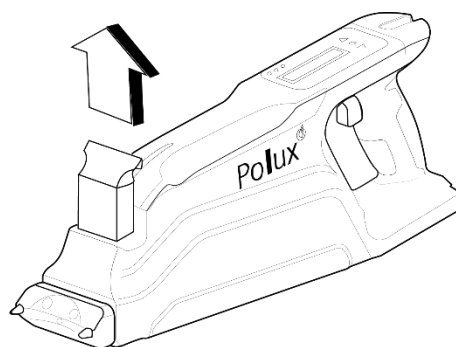




1. Introduction to the device

1.3 Identification of the serial number

Each Polux 5 device has its own serial number engraved on the front plate locker.



Serial number: **PX05-03-0011**

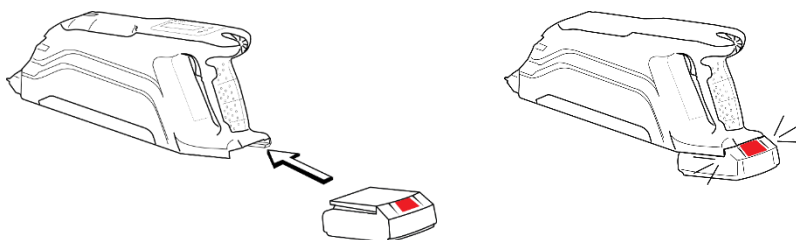


1. Introduction to the device

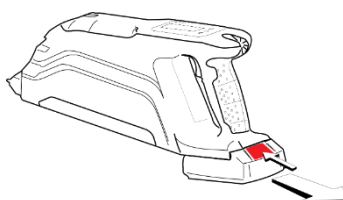
1.4 Install the battery

Polux 5 utilizes Bosch Pro 18V batteries

Insert the battery in its housing.



1.5 Remove the battery

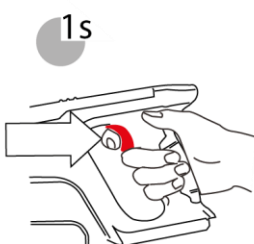




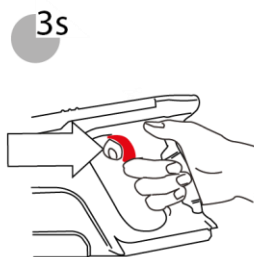
1. Introduction to the device

1.6 Switching the device ON

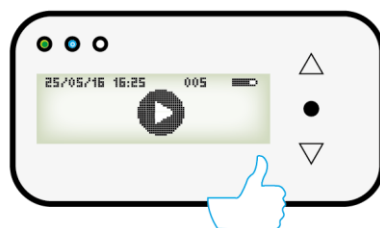
1



2



3



Check that a charged battery has been properly installed

1 Press briefly on the trigger to switch the device on

2 Press on the trigger until the menu appears

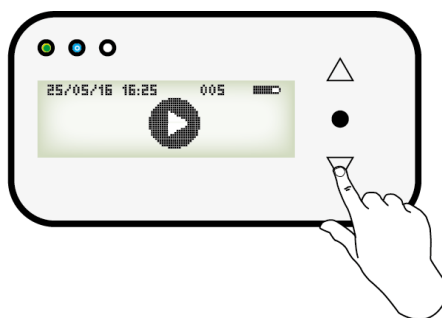
3 The device is ready to be used



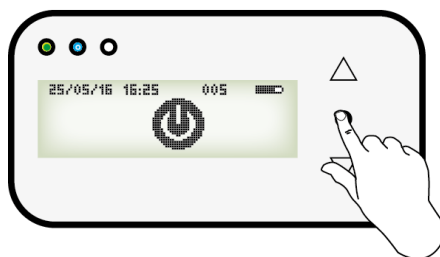
1. Introduction to the device

1.7 Switching the device OFF

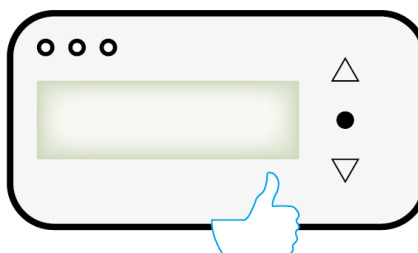
1



2



3



In the menu,

1 Select the icon «Switch off»

2 Confirm

3 The device has been switched off



Auto-switch off: without any intervention on the Polux after 5 min, the device switches off automatically.

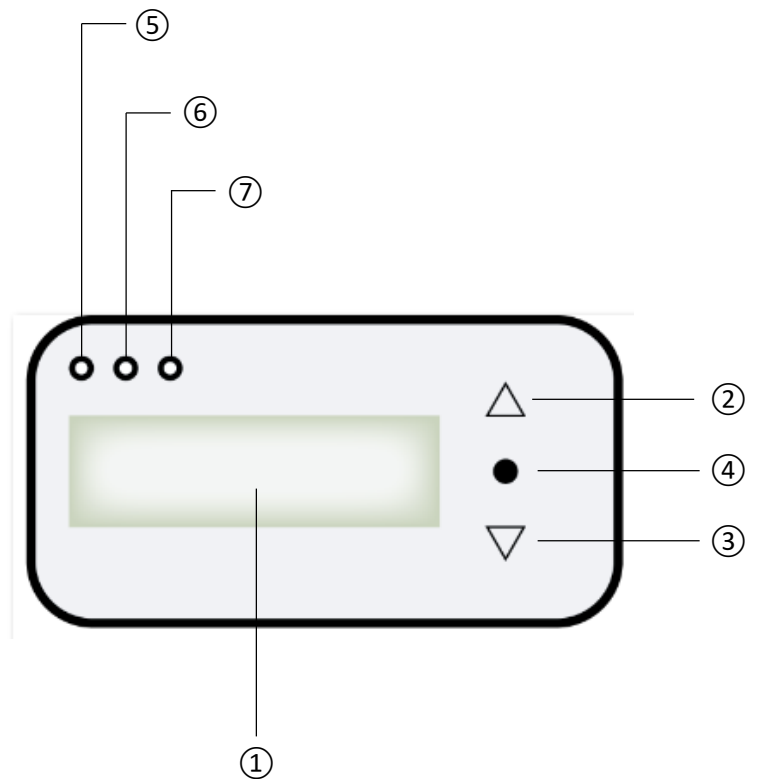


2. Presentation of the display, the menu and the screens

2.1 Display

Polux 5 has a display including 3 LEDs and a keyboard with 3 buttons.

1



① Display

② Scrolling up

③ Scrolling down

④ Confirmation

⑤ LED «Device status» (green or red)

⑥ LED «Bluetooth status» (blue)

⑦ LED «Data transfer» (blue)



2. Presentation of the display, the menu and the screens

2.2 Menu

2



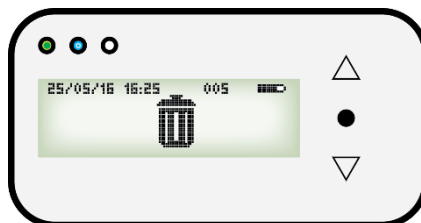
«MEASURING» mode

3



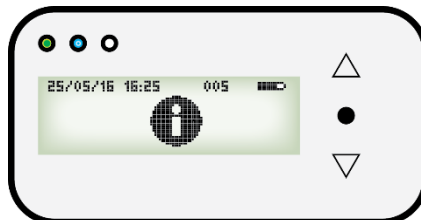
«MAINTENANCE» mode

4



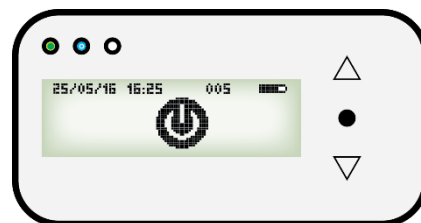
«DELETE LAST MEASUREMENT» mode

5



«INFORMATION» mode

6



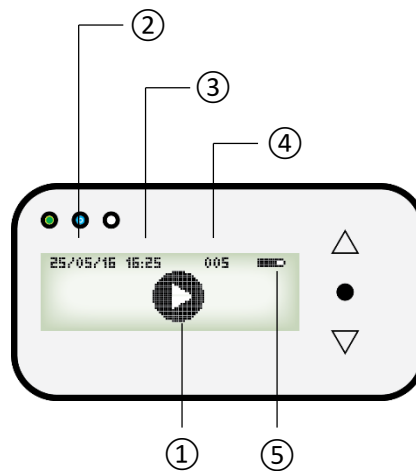
«SWITCH OFF» mode



2. Presentation of the display, the menu and the screens

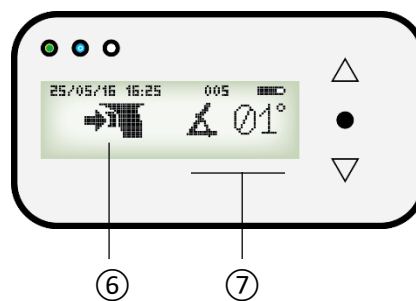
2.3 Screens

7



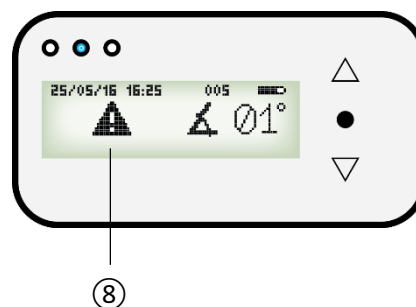
- ① Mode
- ② Date
- ③ Time
- ④ Polux number
- ⑤ Battery level

8



- ⑥ Press on the trigger
- ⑦ Angle of the device / ground

9



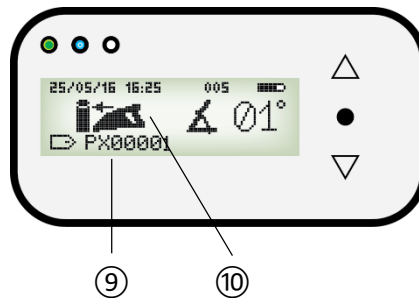
- ⑧ Warning (ref. error messages list)



2. Presentation of the display, the menu and the screens

2.3 Screens

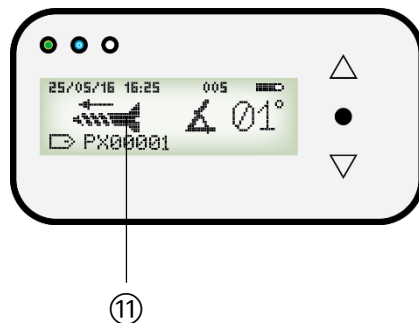
10



⑨ Measure number

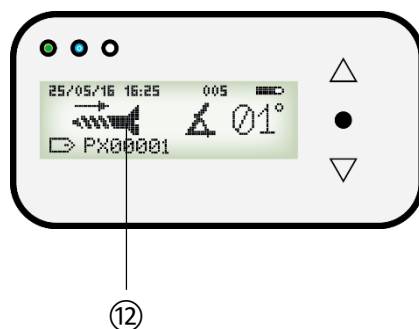
⑩ Apply the Polux on the pole

11



⑪ Screwing process

12



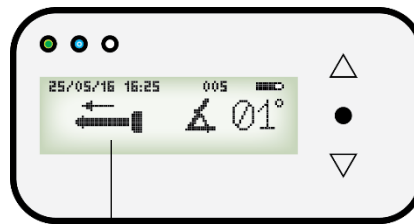
⑫ Unscrewing process



2. Presentation of the display, the menu and the screens

2.3 Screens

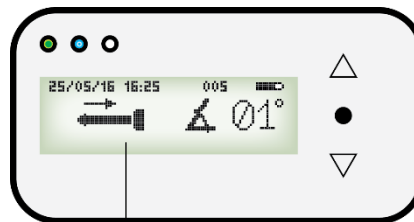
13



13

⑬ Send the measuring pins into the wood

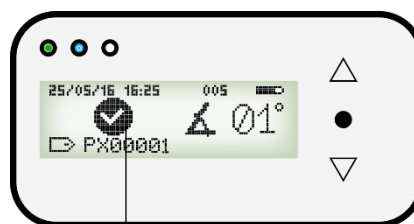
14



14

⑭ Retract the measuring pins from the wood

15



15

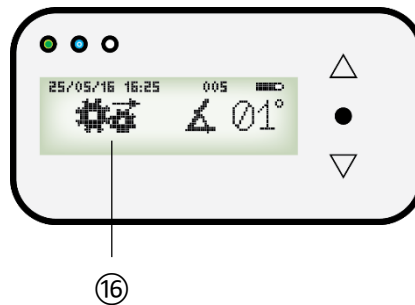
⑮ Confirmation of the data storage



2. Presentation of the display, the menu and the screens

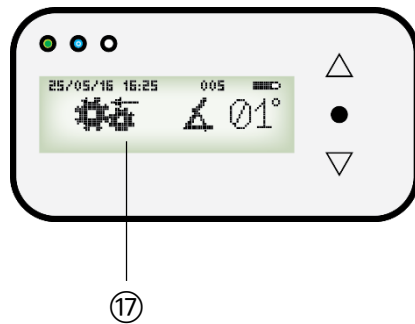
2.3 Screens

16



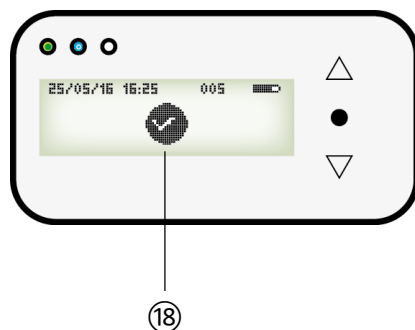
⑩ Clutch screw - pins

17



⑩ Clutch pins - screw

18



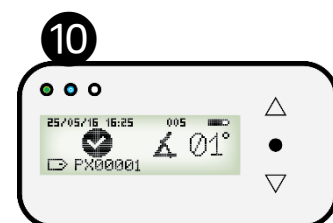
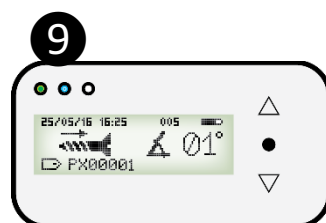
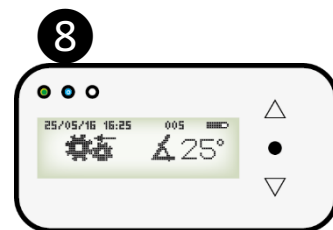
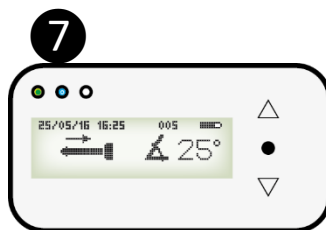
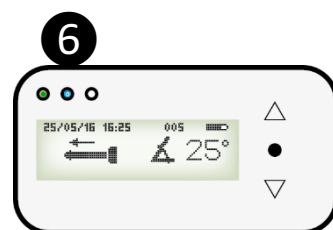
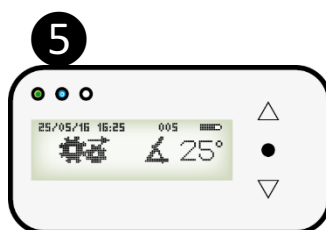
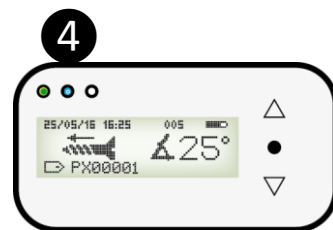
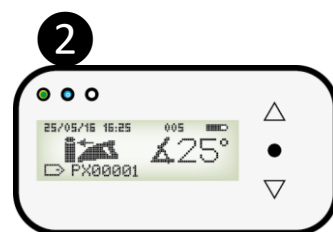
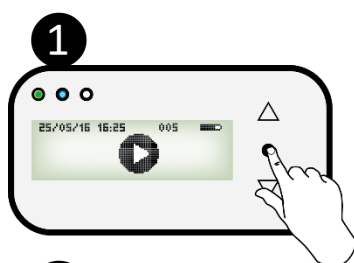
⑩ Last measurement deleted



3. «Measuring» mode

3.1 Performing a measurement

- 1 Select and confirm «Measuring» mode
- 2 Tilt the Polux to the appropriate angle and hold the device against the pole
- 3 Press on the trigger until the measurement validation (end of the measurement)
- 4 Screwing process
- 5 Clutch screw – pins
- 6 Send pins into the wood
- 7 Retract pins into the device
- 8 Clutch pins – screw
- 9 Unscrewing process
- 10 The data are stored, the measurement is finished, release the trigger





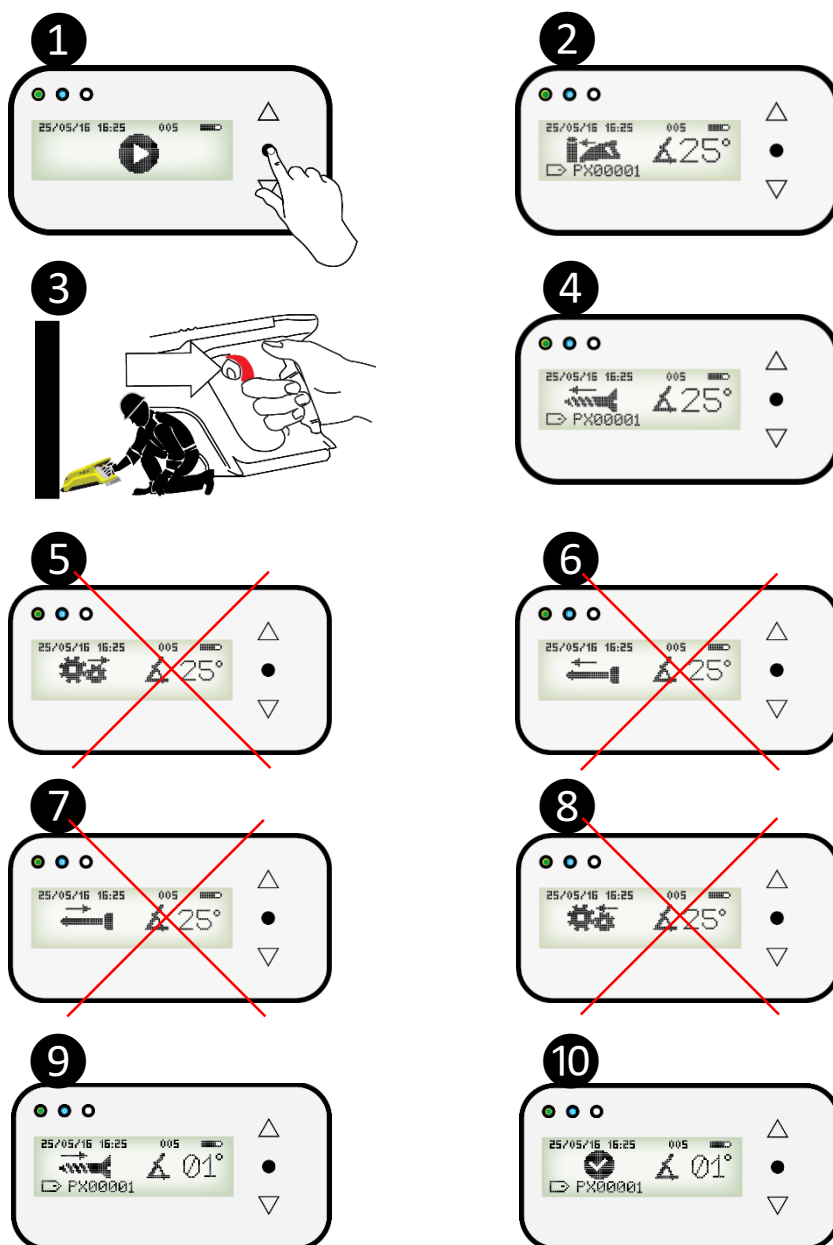
3. «Measuring» mode

3.2 Case of a weak wood

During the screwing process
 ④ Polux evaluates if the wood strength is sufficient to allow the measuring pins to be driven correctly into the wood

If it's not the case, Polux automatically launches the unscrewing process ⑨ at the end of which the measurement is stored ⑩

Once the measurement is stored, release the trigger





3. «Measuring» mode

3.3 Stop / Cancel a measurement

3.3.1 Stop a measurement

If, during a measurement, the operator releases and then re-engages the trigger, the measurement restarts where it stopped.

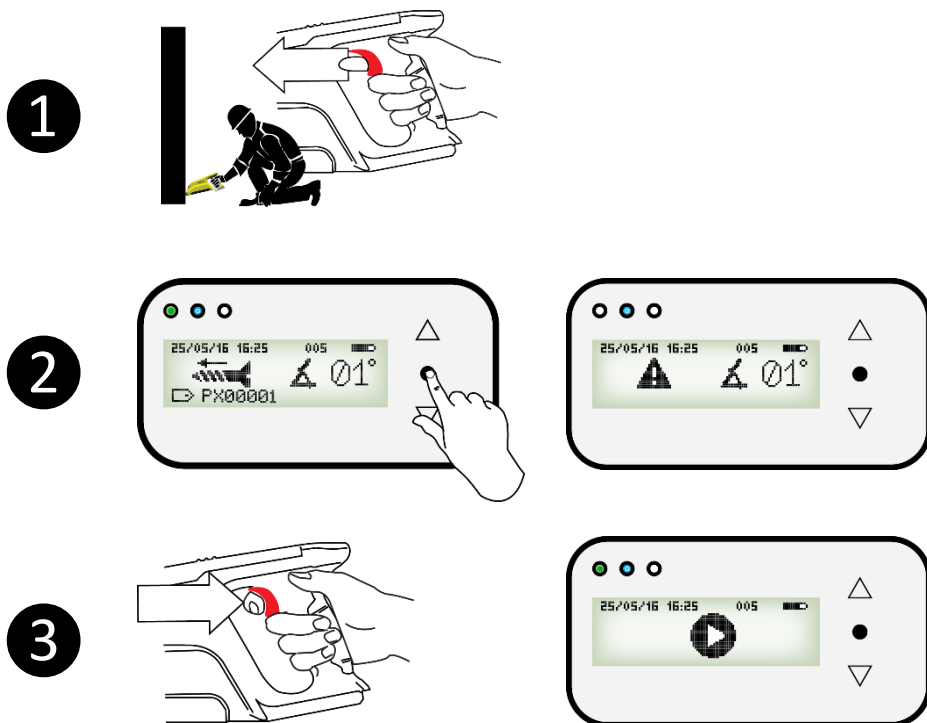
The measurement will be stored at the end of the cycle.

3.3.2 Cancel a measurement

To cancel a measurement, the operator has to:

- ❶ Release the trigger
- ❷ Press on the button «Confirm» (❹)
- ❸ Press on the trigger until the screw is fully back in the device and the menu appears

The measurement is not stored





3.4 Error messages

Some errors may appear when using the Polux.

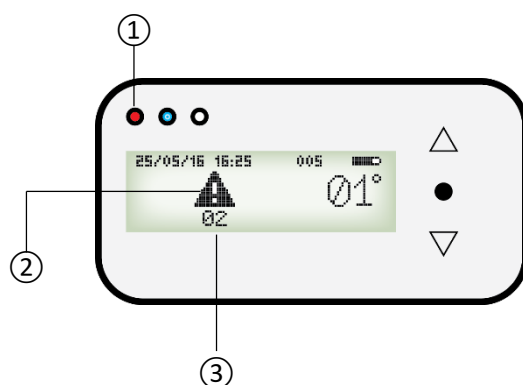
A red LED is on together with the error number

3. «Measuring» mode

① Red LED to inform an error has occurred

② Warning icon informs an error has occurred

③ Error number



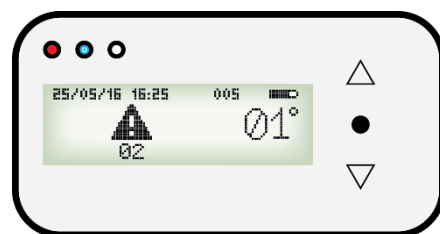
3.4.1 Error 02

Over tension in the motor

The motor receives an inappropriate current that can damage the mechanics

- Release the trigger
- Remove the battery
- Let the device cooling down
- Try again

If the error message persists, please contact your vendor





3. «Measuring» mode

3.4 Error messages

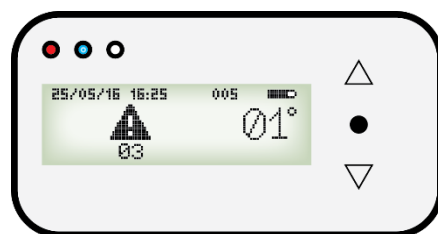
3.4.2 Error 03

Force too high

The load sensor records a force too high for its capacity

- Release the trigger
- Cancel the measurement
- Press on the trigger to get the screw back in the device
- The measurement is stored

If the error message persists, please contact the vendor



3.4.3 Error 04

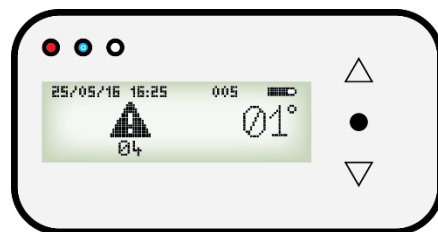
Clutch problem

There is a problem with the clutch

- Release the trigger and press again on it to try to make the clutch pass

If the problem persists:
→ Cancel the measurement and release the device

If the error message persists, please contact your vendor





3. «Measuring» mode

3.4 Error messages

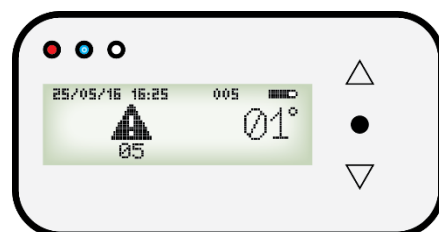
3.4.4 Error 05

Temperature too high in the electronic board

The electronic board records a temperature high enough to damage it

- Release the trigger
- Remove the battery
- Let the device cool down
- Try again

If the error message persists, please contact your vendor

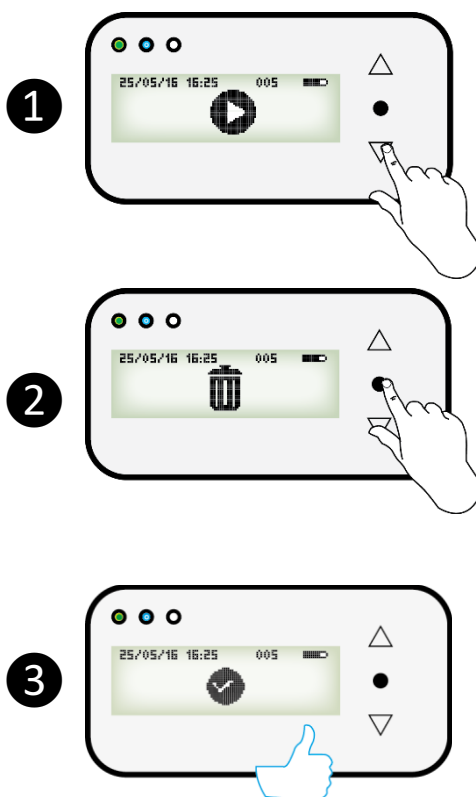




4. «Delete last measurement» mode

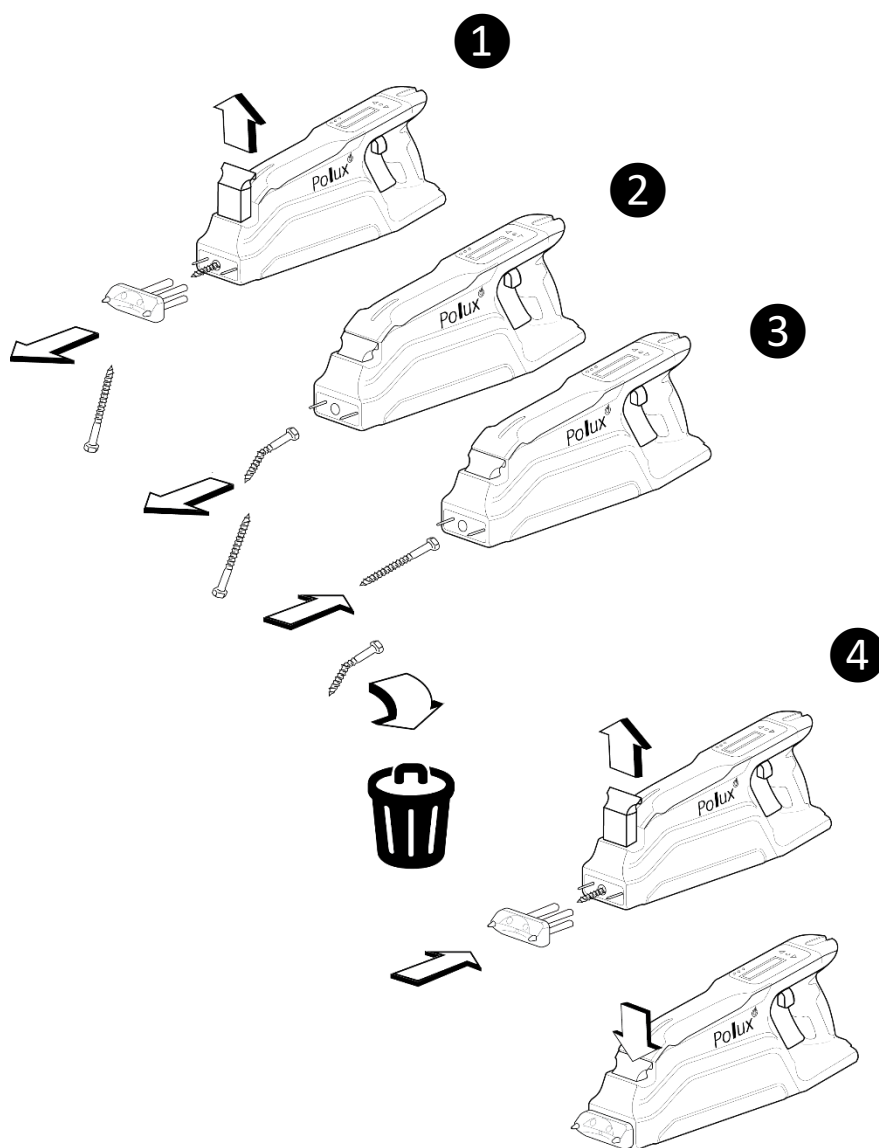
4.1 Delete the last measurement

- ❶ Select the icon «Delete the last measurement»
- ❷ Press on «Confirm»
- ❸ The last measurement has been deleted



5. «Maintenance» mode

5.1 Change a fixing screw



- 1 Release the front plate
- 2 Remove the broken screw
- 3 Insert the new screw
- 4 Re-install the front plate and lock it

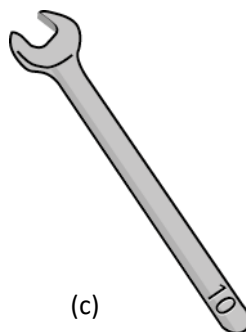
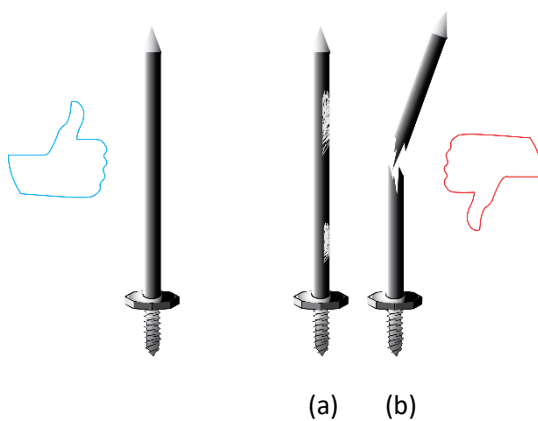


5. «Maintenance» mode

5.2 Change the measuring pins

The measuring pins must be changed when the isolation is damaged (a) or when a pin is broken (b)

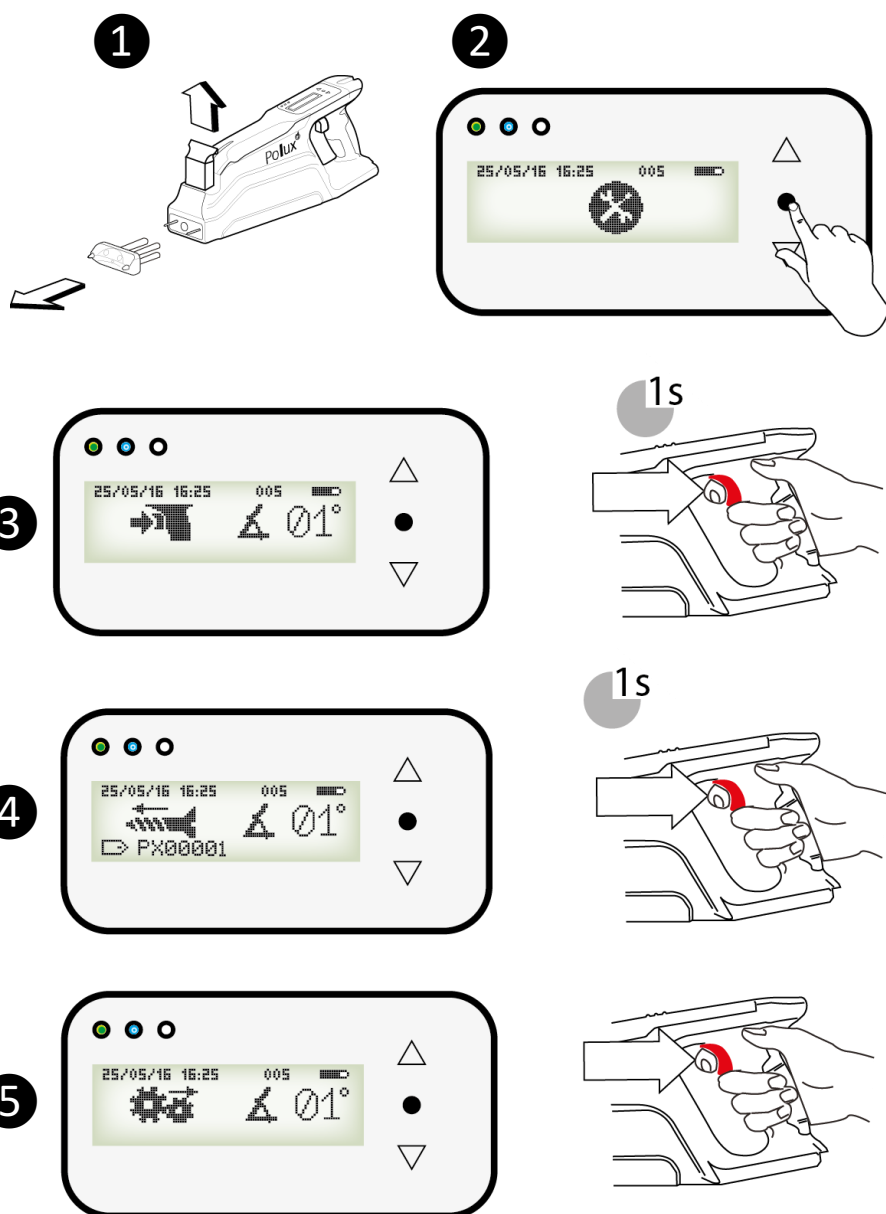
An hexagonal key #10 (c) is required to install the pins.





5. «Maintenance» mode

5.2 Change the measuring pins



① Release the front plate

② Select and confirm
«Maintenance» mode

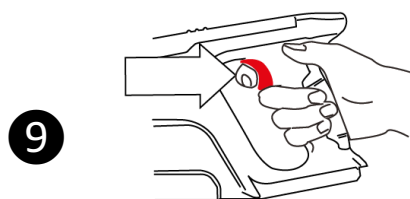
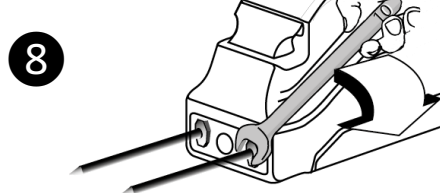
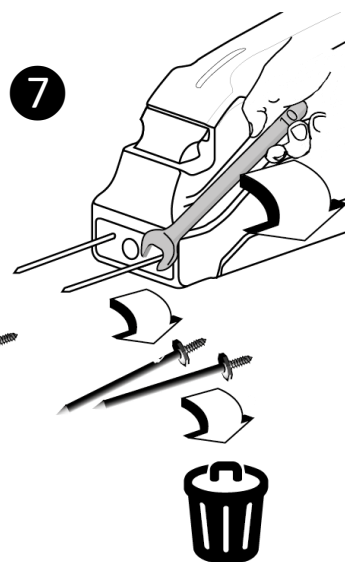
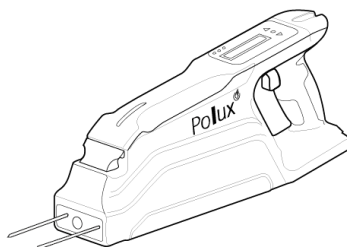
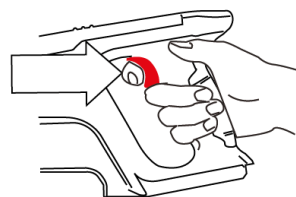
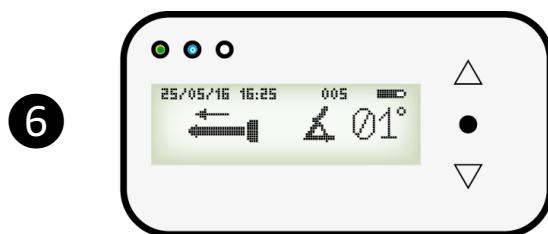
③ and ④ Press briefly on
the trigger to activate the
screwing process

⑤ Hold the trigger to
activate the pin process



5. «Maintenance» mode

5.2 Change the measuring pins



6 Continue holding the trigger until the pins are completely out of the device

7 Remove the measuring pin(s)

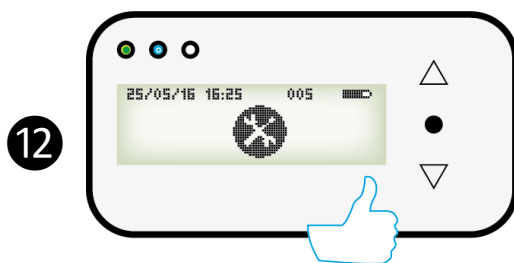
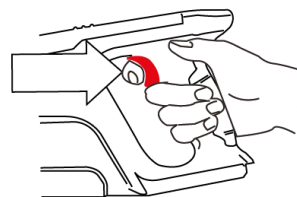
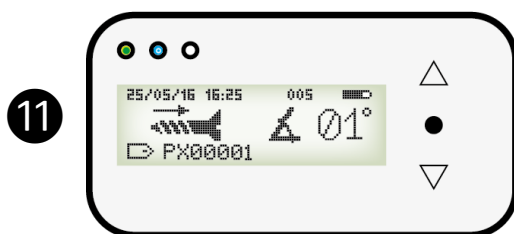
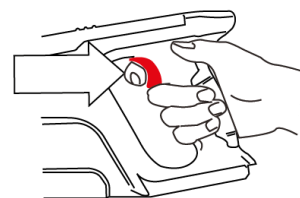
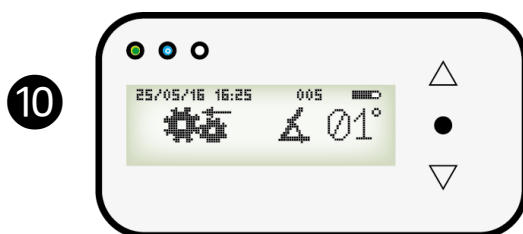
8 Install the new measuring pin(s)

9 Press and hold the trigger until the pins are completely back in the device



5.2 Change the measuring pins

5. «Maintenance» mode



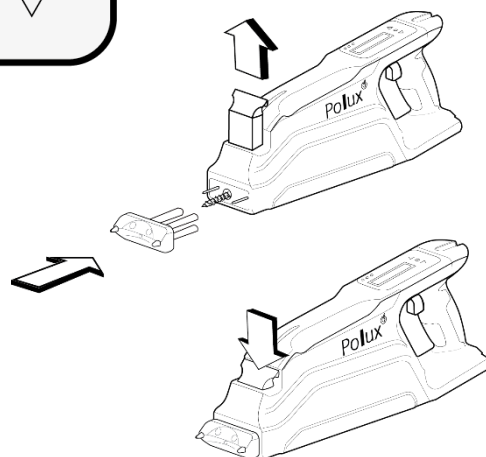
10 Press briefly on the trigger to set the unscrewing mode

11 Press and hold the trigger until the menu appears

12 The change of the measuring pins is complete

13 Re-install the front plate and lock it

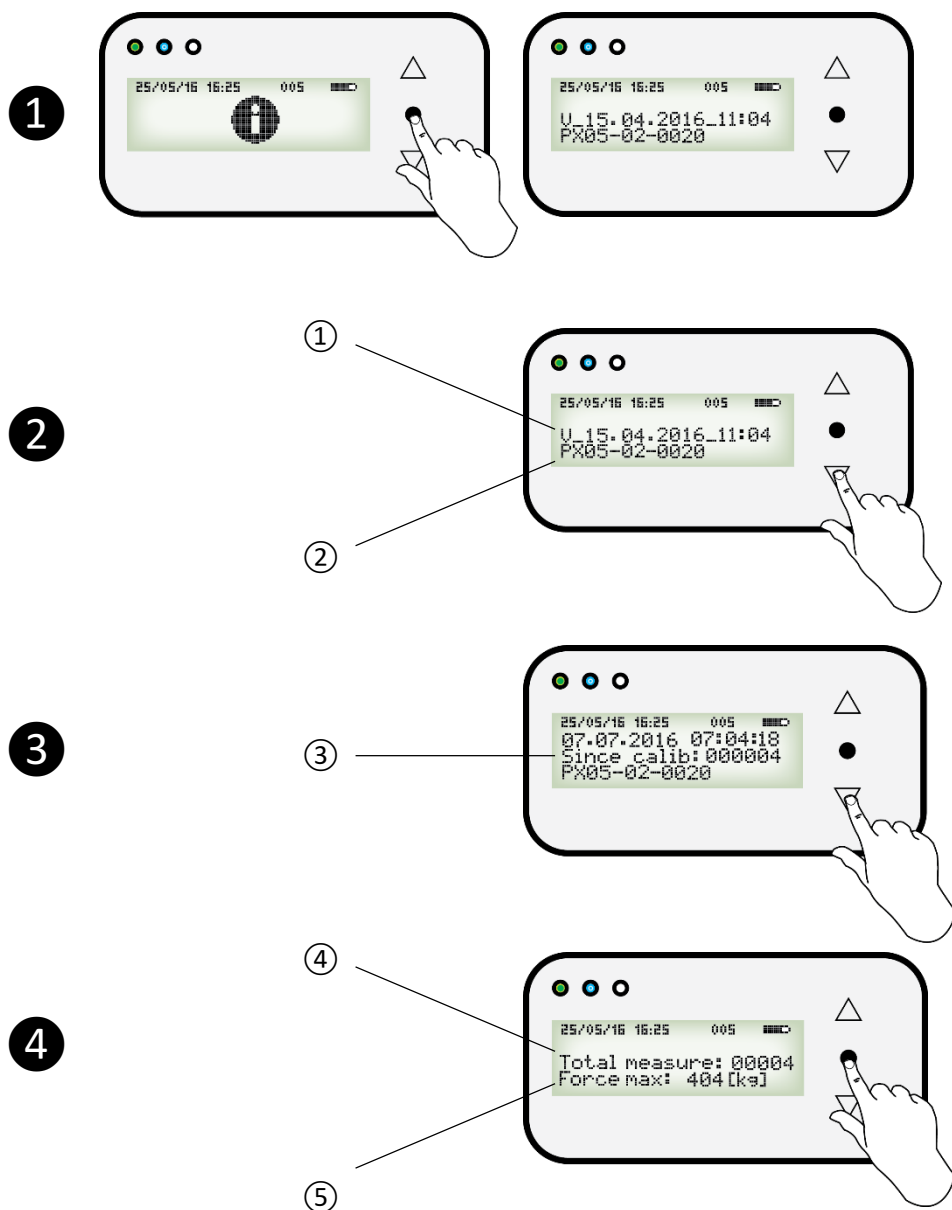
13





Polux records information about the device in the «Information» mode

6. «Information» mode



① and ② Select and confirm «Information» mode, **Screen 1**

- ① Polux software version
- ② Polux serial number

② Scroll down, **Screen 2**

- ③ Date of the last calibration and number of measurements from this date

③ Scroll down, **Screen 3**

- ④ Total number of measurements
- ⑤ Maximum force registered by the device

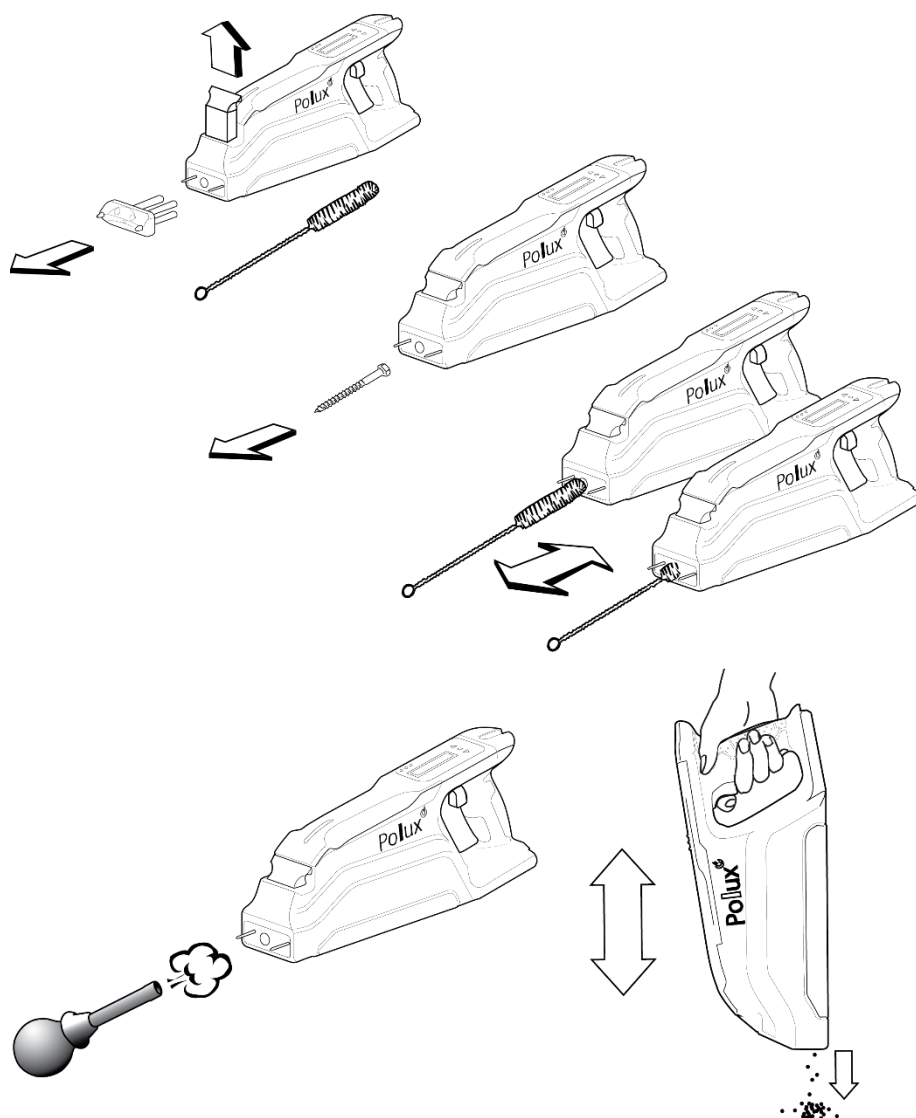


7. Maintenance of the Polux 5 device

7.1 Routine maintenance of the Polux device

After measurements during a rainy day, it is strongly advised to wipe the device thoroughly and store it in a ventilated area.

Some mud and dirt may go into the device through the front plate holes. Remove as appropriate using a brush and/or blower as illustrated





7. Maintenance of the Polux 5 device

7.2 Cleaning of the pushing

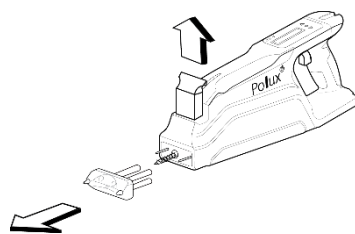
The pushing is located behind the screw and can get dirty which may cause an error in detecting the screw location

It is advised to clean it regularly

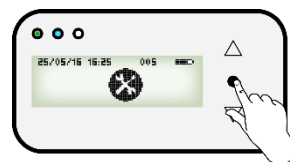
Screw

Pushing
(magnet)

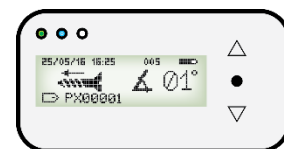
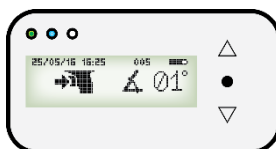
1



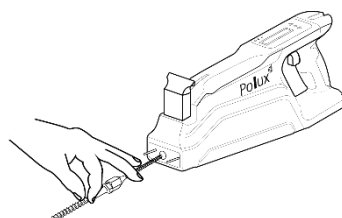
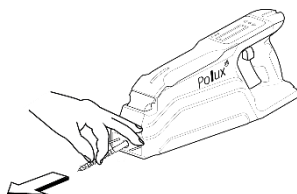
2



3



4



1 Release the front plate

2 Select and confirm
«Maintenance» mode

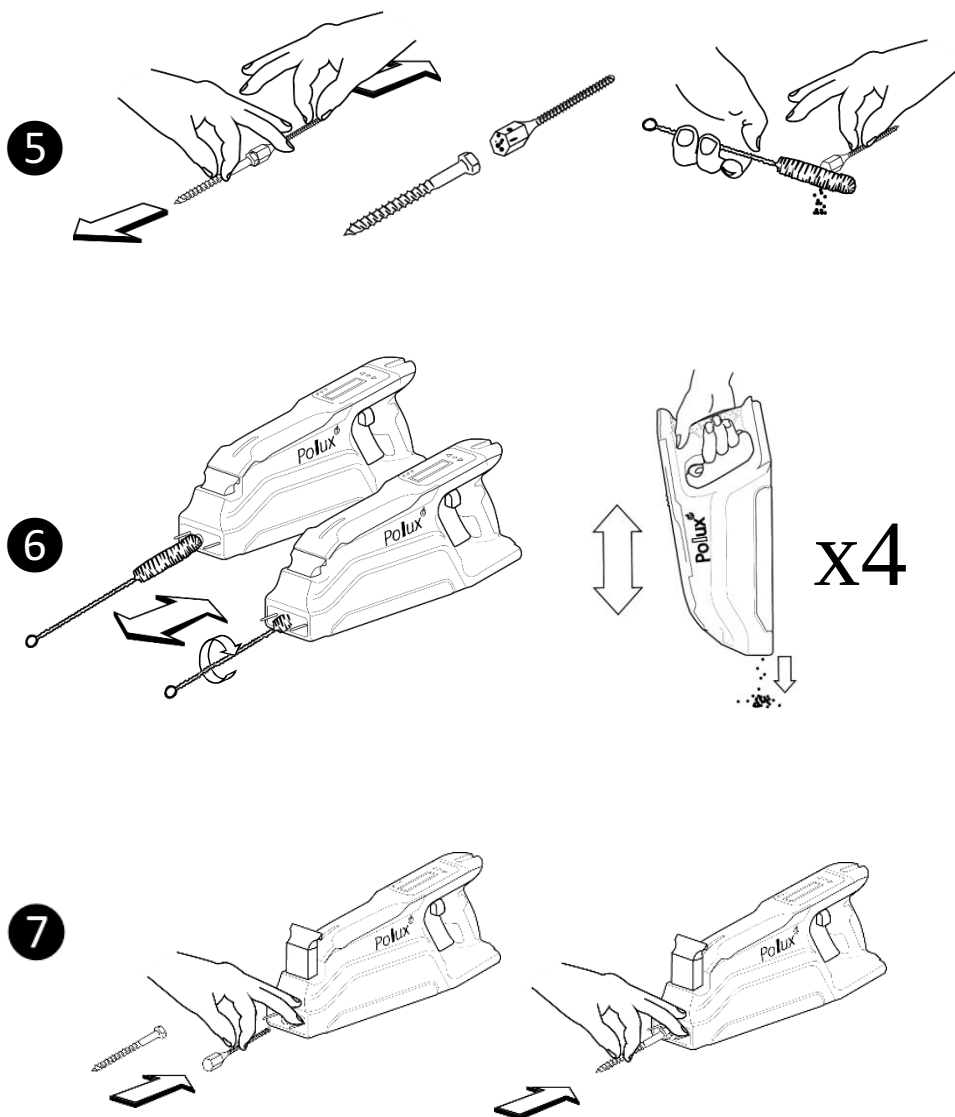
3 Press on the trigger until
the screw is completely out
of the device

4 Remove the screw
together with the pushing



7. Maintenance of the Polux 5 device

7.2 Cleaning of the pushing



⑤ Split the screw from the pushing (magnet) and clean it

⑥ Thoroughly clean the threaded tube over its entire length by turning clockwise and repeating the operation

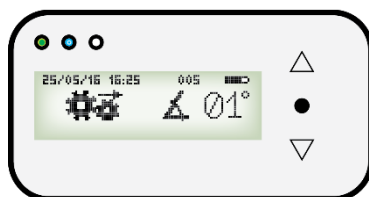
⑦ Insert the cleaned pushing in its housing, then the screw



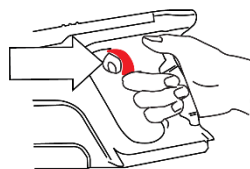
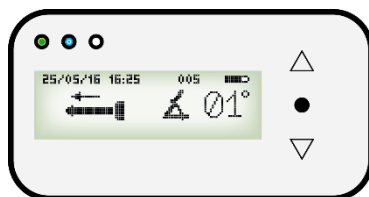
7. Maintenance of the Polux 5 device

7.2 Cleaning of the pushing

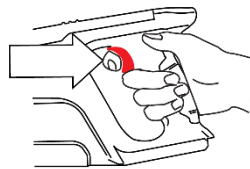
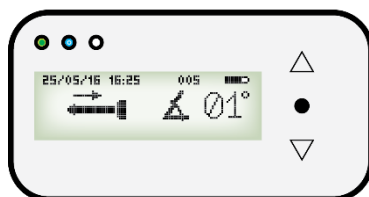
8



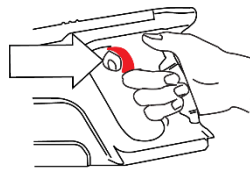
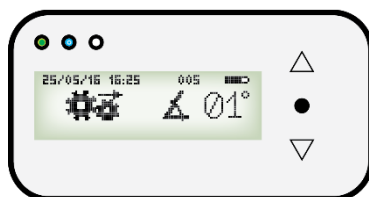
9



10



11



12



8 Press briefly on the trigger to launch the pins mode

9 Press briefly on the trigger to pass the mode «pins out»

10 Press briefly on the trigger to pass the mode «pins in»

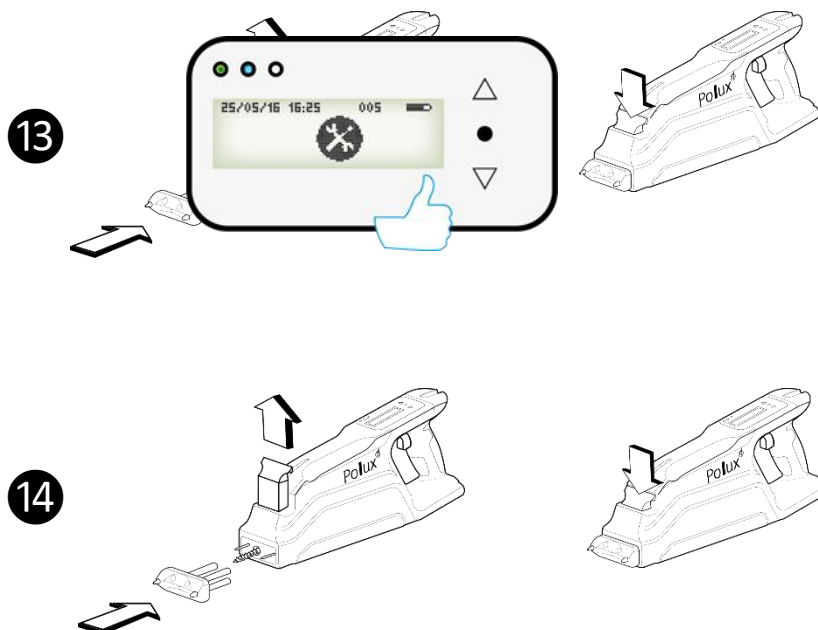
11 Press briefly on the trigger to launch the screw mode

12 Press and hold the trigger until the menu appears



7. Maintenance of the Polux 5 device

7.2 Cleaning of the pushing



13 The process to clean the pushing is complete

14 Re-install the front plate and lock it

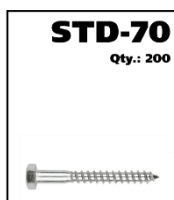
8. General characteristics

Dimensions:	394 x 160 x 82 [mm] (15.5 x 6.3 x 3.2 [in])
Weight:	2.8 [kg] without battery (7.71 pounds)
Battery:	Bosch Pro Li-on 18V
Connectivity:	Bluetooth
Inclinometer:	Integrated
Measuring pins:	Model specific
Fixing screw:	Model specific

Polux[®]
www.polux-technology.com

Vis standard pour:
Standard screw for:
Standardschraub für:
Tornillo estándar para:

POLUX 5



Qty.: 200



Polux[®]
www.polux-technology.com

Pointe de mesure pour:
Measuring pin for:
Messspitzen für:
Punta de medición para:

POLUX 5



Qty.: _____





9. Storage conditions

The storage conditions for the Polux 5 device are:

- Remove the battery
- Clean the device and the pushing
- Store the device in a dry area
- Store the device in an area with no direct light exposure from the sun
- Store the device in a ventilated area
- Store the device in a moderate temperature area (10°C – 20°C) / (50°F – 85°F)

