



**English** 





### 1 Information about the documentation

### 1.1 About this documentation

- Read this documentation before initial operation or use. This is a prerequisite for safe, trouble-free handling and use of the product.
- Observe the safety instructions and warnings in this documentation and on the product.
- Always keep the operating instructions with the product and make sure that the operating instructions are with the product when it is given to other persons.

### 1.2 Explanation of signs used

### 1.2.1 Warnings

Warnings alert persons to hazards that occur when handling or using the product. The following signal words are used in combination with a symbol:

Æ **DANGER!** Draws attention to imminent danger that will lead to serious personal injury or fatality.

WARNING! Draws attention to a potential hazard that could lead to serious personal injury or ⚠ fatality.

CAUTION! Draws attention to a potentially dangerous situation that could lead to slight personal  $\Lambda$ injury or damage to the equipment or other property.

## 1.2.2 Symbols

The following symbols are used:



Read the operating instructions before use.



Instructions for use and other useful information



Protection class II (double-insulated)



For indoor use only

### 1.2.3 Illustrations

The following symbols are used in illustrations:

2





Item reference numbers are used in the overview illustration and refer to the numbers used in the product overview section.

### 1.3 Product information

Hilti products are designed for professional use and may be operated, serviced and maintained only by trained, authorized personnel. This personnel must be informed of any particular hazards that may be encountered. The product and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.

- Make a note in one of the following tables of the designation and serial number printed on the type identification plate.
- Always quote this information when you contact a Hilti representative or Hilti Service to enquire about the product.

### PSA 80, PSA 81, PSA 82 and PSA 83 product information

Battery	PSA 80   PSA 81   PSA 82   PSA 83
Generation	01
Serial no.	

### **PSA 81 Product information**

Battery	PSA 81
Generation	02

Serial no.	

### **PSA 81 Product information**

Battery	PSA 81
Generation	05
Serial no.	

### PSA 85 and PSA 86 product information

Charger	PSA 85   PSA 86
Generation	01

### PUA 81 and PUA 85 19V product information

AC adapter	PUA 81   PUA 85 19V
Generation	01

### PUA 82 and PUA 86 19V product information

Motor vehicle power adapter	PUA 82   PUA 86 19V
Generation	01

### 2 Safety

### 2.1 Additional safety instructions

## Personal safety

- Modification of the tool is not permitted.
- ▶ Do not use force when inserting the batteries in the tool.
- ► The tool is not intended for use by debilitated persons who have received no special training. Keep the tool out of reach of children.
- This appliance may be used by children 8 years of age or older and by persons with physical, sensory or mental disabilities or little relevant experience or know-how so long as they are supervised or they have received instruction on the safe use of the appliance and on the potential resulting hazards. Do not allow children to play with the appliance. Do not allow unsupervised children to clean the appliance or to perform maintenance tasks intended to be carried out by users.
- Store tools in a secure place when not in use. When not in use, tools must be stored in a dry, high place
  or locked away out of reach of children.
- Ensure that the tool and the AC adapter do not present an obstacle that could lead to a risk of tripping
  or personal injury.
- Do not expose the supply cords to heat, oil or sharp edges.
- Never operate the appliance when it is dirty or wet. Dust (especially dust from conductive materials) or dampness adhering to the surface of the appliance may, under unfavorable conditions, lead to electric shock.
- ▶ Remove the battery if the tool is to remain unused for a long period of time.
- Under abusive conditions, liquid may be ejected from the battery. Avoid contact with the liquid. If contact
  accidentally occurs, flush with water. If the liquid contacts the eyes, also seek medical attention. Liquid
  ejected from the battery may cause skin irritation or burns.
- Have the electric tool repaired only by a qualified specialist using only genuine Hilti spare parts. The safety of the electric tool can thus be maintained.
- Do not touch the supply cord or extension cord if it is damaged while you are working. Disconnect the supply cord plug from the power outlet. Damaged supply cords and extension cords present a risk of electric shock.

#### Electrical

- Although the device complies with the strict requirements of the applicable directives, Hilti cannot
  entirely rule out the possibility of interference to the device caused by powerful electromagnetic radiation,
  possibly leading to incorrect operation.
- Use the battery charger only inside dry rooms. Water entering an electric appliance will increase the risk
  of electric shock.
- When the battery is not in use, keep it away from other metal objects such as paper clips, coins, keys, nails, screws, or other small metal objects that could cause bridging between the terminals. A short circuit between the contacts may result in burning injuries or fire.

- ▶ Check the tool and batteries for damage before use after long periods of storage.
- Never continue to use or attempt to charge damaged batteries, e.g. batteries with cracks, broken parts, bent or pushed-in / pulled-out contacts).
- ► The plug on the supply cord of the electric tool must match the power outlet. Do not change the plug in any way. Do not use adapter plugs with earthed (grounded) electric tools. Unmodified plugs and matching outlets reduce risk of electric shock.
- Use the battery charger only inside dry rooms. Water entering an electric appliance will increase the risk
  of electric shock.

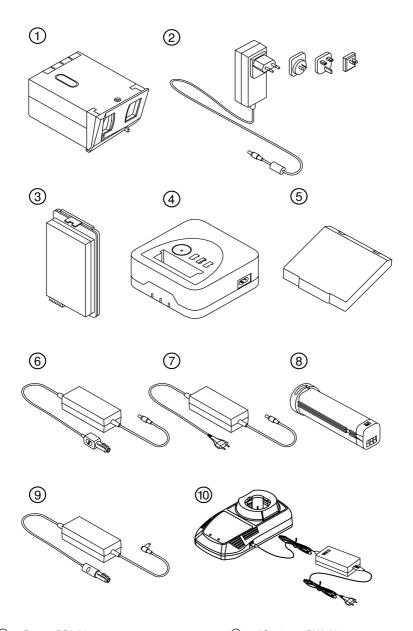
# Cleaning and drying the tool

- Clean the tool with a clean, soft cloth.
- Maintain the appliance carefully. Check to ensure that no parts are broken or damaged in such a way that the appliance might no longer function correctly. Have damaged parts repaired before using the appliance.
- Do not abuse the cord. Never use the cord to carry or hang up the electric tool or to pull the plug out of the power outlet. Keep the cord well away from heat, oil, sharp edges and moving parts. Damaged cords increase the risk of electric shock.

### 2.2 Use and care of battery-powered tools

- ▶ Use only the Hilti batteries specified for use with this product.
- ▶ Observe the special guidelines applicable to the transport, storage and use of Li-ion batteries.
- Check that the product is switched off before fitting the battery.
- Do not expose batteries to high temperatures, direct sunlight or fire.
- Do not disassemble, crush or incinerate batteries and do not subject them to temperatures over 75°C (167°F).
- Do not attempt to charge or continue to use damaged batteries.
- If the battery is too hot to touch it may be defective. In this case, place the tool in a non-flammable location, well away from flammable materials, where it can be kept under observation and allowed to cool down. Contact Hilti Service after the battery has cooled down.

# 3.1 Accessories



① Battery PSA 81

2 AC adapter PUA 81

- (3) Battery PSA 82 AC adapter PUA 85 19V
- (4) (8) Charger PSA 85 Battery PSA 80
- (5) Battery PSA 83 9 PUA 86 19V motor vehicle power adapter (6)
  - PUA 82 motor vehicle power adapter (10) Charger PSA 86

### 3.2 Intended use

Use the PSA 80 only to power the Hilti PS 200 S Ferroscan and the PS 200 M monitor. Charge the PSA 80 battery with the PSA 86 charger.

Use the PSA 81 battery only to power the Hilti PS 1000 X-Scans. Charge the PSA 81 (01 and 02) battery only with the PUA 81 AC adapter or the PUA 82 motor vehicle power adapter. Charge the PSA 81 (05) with the PUA 85 19V or PUA 81 AC adapter.

Use the PSA 82 battery to power the Hilti PSA 100 monitor. Charge the battery in the device using the PUA 81 AC adapter or the PUA 82 motor vehicle power adapter. Alternatively, you can use the PSA 85 charger to charge the PSA 82 battery when it is not in the device.

Use the PSA 83 battery to power the Hilti PSA 200 tablet. Use the PUA 85 19V AC adapter to charge the battery while it is installed in the device.

Use the PSA 85 charger to charge the PSA 82 battery.

Use the PSA 86 charger to charge the PSA 80 battery.

Use the PUA 81 AC adapter to charge the PSA 81 (01, 02 and 05) battery, the PSA 82 battery when it is in the PSA 100 monitor (when switched off or in operating mode) and the PRA 84 battery.

Use the PUA 82 motor vehicle power adapter to charge the PSA 81 (01, 02 and 05) battery, the PSA 82 battery when it is in the PSA 100 monitor (when switched off or in operating mode) and the PRA 84 battery. Use the PUA 85 19V AC adapter to charge the PSA 81 (05) battery and to charge the PSA 83 battery in the PSA 200 tablet.

Use the PUA 86 19V motor vehicle power adapter to charge the PSA 81 battery (05) and to charge the PSA 83 battery in the PSA 200 tablet.

### 3.3 Foreseeable faults

Do not use the PUA 85 19V to charge the PSA 81 battery (01 and 02).

Do not use the battery as a power source for other unspecified appliances.

Do not use the device where there is a risk of fire or explosion.

### 3.4 Battery charge status indicator PSA 81

PSA 81

The PSA 81 battery is equipped with 5 LEDs that indicate the state of charge. To display the current state of charge, press the button on the top of the battery. Up to 4 green LEDs then light for a few seconds; the more LEDs that light, the better is the battery's state of charge.

Status	Meaning
4 LEDs light green.	State of charge: 75 % to 100 %
3 LEDs light green.	State of charge: 50 % to 75 %
2 LEDs light green.	State of charge: 25 % to 50 %
1 LED lights green.	Charge status: < 25 %
1 LED lights red.	Error



## Note

The fault may be remedied by charging the battery. If charging does not remedy the fault, the battery must be replaced.

### The error message can have the following causes:

- Voltage too high
- Short circuit
- Voltage too low
- Temperature is outside the charging temperature range
- Wrong charger is connected
- Electronic fault

While charging, the LEDs show the following statuses:

Status	Meaning
3 LEDs light, 1 LED blinks.	State of charge: 75 % to 100 %
2 LEDs light, 1 LED blinks.	State of charge: 50 % to 75 %
1 LED lights, 1 LED blinks.	State of charge: 25 % to 50 %
1 LED blinks.	Charge status: < 25 %

# **>**♥€

### Note

The PSA 81 (01 and 02) battery may be charged only with the PUA 81 AC adapter. The PSA 81 (05) battery can be charged using the PUA 81 or PUA 85 19V AC adapter.

# 3.5 PSA 82 battery charging status display on the PSA 100 monitor

PSA 82 PUA 81

The charging LED can have the following statuses:

Status	Meaning
1 LED lights green.	The battery is fully charged.
LED 1 blinks green	The battery is charging
No LED lights while in operating mode	The battery is discharging.

## 3.6 Charging status display on the PSA 82 battery when charging with the PSA 85 charger

PSA 82 PSA 85

The charging LED can have the following statuses:

Status	Meaning
1 LED lights green.	The battery is fully charged.
1 LED lights orange.	The battery is charging.
1 LED lights red.	State of charge: < 25 %

## 3.7 Charging status display on the PSA 86 charger

PSA 86

Status	Meaning
1 LED lights red.	The battery is charging.
1 LED lights green.	The charger is in working order.
1 LED blinks red	The battery is fully charged.
1 LED blinks green	The charger or the battery is not in working order.

### The error message can have the following causes:

- Voltage too high
- Short circuit
- Voltage too low
- · Temperature is outside the charging temperature range
- · Electronic fault



### Note

If the battery is not recognized by the charger, this may indicate that the battery is defective. In this case, the battery can no longer be charged and only the green LED on the charger lights when the battery is inserted. To obtain a replacement battery, please contact **Hilti** Customer Service.

# 4 Technical data

# 4.1 Battery technical data

	PSA 80	PSA 81 (01 and 02)	PSA 81 (05)
Туре	NiMH	Li-ion	Li-ion
Rated voltage	9.6 V	7.4 V	7.4 V
Operating voltage	•/•	6 V8.4 V	6.5 V8.4 V
Input voltage	•/•	12 V	12 V19 V
Capacity	2,000 mAh	5,200 mAh	5,000 mAh
Charging time	3 h	3 h	3 h
IP protection class	54	56	56
Operating temperature	0 °C40 °C	−15 °C50 °C	-20 °C50 °C
	(32 °F104 °F)	(5 °F122 °F)	
Storage temperature (dry)	•/•	−25 °C60 °C	-20 °C50 °C
		(−13 °F140 °F)	(−4 °F122 °F)
Charging temperature	0 ℃30 ℃	0 °C40 °C	0 °C40 °C
	(32 °F86 °F)	(32 °F 104 °F)	(32 °F 104 °F)
Weight	0.3 kg	0.3 kg	0.3 kg
	(0.7 lb)	(0.7 lb)	(0.7 lb)
Min. number of charging cy- cles	500 (typically)	•/•	•/•

	PSA 82	PSA 83
Туре	Li-ion	Li-ion
Rated voltage	7.4 V	•/•
Operating voltage	4.3 V	10.8 V
Input voltage	•/•	11 V36 V
Capacity	4,800 mAh	9,000 mAh
Charging time	3 h	5 h
IP protection class	56	•/•
Operating temperature	−15 °C60 °C	0 °C55 °C
	(5 °F140 °F)	(32 °F131 °F)
Storage temperature (dry)	−25 °C60 °C	-40 °C70 °C
	(−13 °F140 °F)	(−40 °F158 °F)
Charging temperature	0 °C45 °C	0 °C40 °C
	(32 °F113 °F)	(32 °F 104 °F)
Weight	0.24 kg	0.56 kg
	(0.53 lb)	(1.23 lb)
Min. number of charging cy- cles	•/•	•/•

# 4.2 Charger / AC adapter technical data

	PUA 81	PUA 82	PUA 85 19V
Rated input voltage	115 V230 V	•/•	115 V230 V
AC frequency	47 Hz63 Hz	•/•	50 Hz60 Hz
Rated power	36 W	36 W	65 W
Rated output voltage	12 V	12 V	19 V
IP protection class	56	54	•/•
Operating temperature	0 °C40 °C	0 °C40 °C	0 °C40 °C
	(32 °F104 °F)	(32 °F 104 °F)	(32 °F 104 °F)

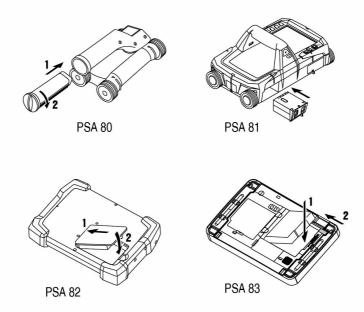
	PUA 81	PUA 82	PUA 85 19V
Storage temperature (dry)	-25 °C60 °C	-20 °C85 °C	-20 °C75 °C
	(−13 °F140 °F)	(−4 °F185 °F)	(−4 °F167 °F)
Charging temperature	0 ℃40 ℃	0 °C40 °C	0 °C40 °C
	(32 °F 104 °F)	(32 °F 104 °F)	(32 °F104 °F)
Weight	0.23 kg	0.24 kg	0.23 kg
	(0.51 lb)	(0.53 lb)	(0.51 lb)

	PSA 85	PSA 86	PUA 86 19V
Rated input voltage	100 V240 V	100 V240 V	10 V32 V
AC frequency	47 Hz63 Hz	50 Hz60 Hz	DC
Rated power	40 W	50 W	90 W
Rated output voltage	8.4 V	19 V	19 V
IP protection class	56	•/•	•/•
Operating temperature	-20 °C40 °C	•/•	5 °C40 °C
	(−4 °F104 °F)		(41 °F104 °F)
Storage temperature (dry)	-25 °C85 °C	-25 °C60 °C	−20 °C85 °C
	(−13 °F185 °F)	(−13 °F140 °F)	(−4 °F185 °F)
Charging temperature	0 °C45 °C	0 °C40 °C	5 °C40 °C
	(32 °F 113 °F)	(32 °F 104 °F)	(41 °F104 °F)
Weight	0.54 kg	0.5 kg	0.52 kg
	(1.19 lb)	(1.1 lb)	(1.15 lb)

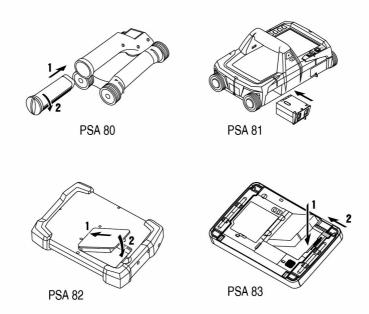
# 5 Operation

# 5.1 Inserting the battery

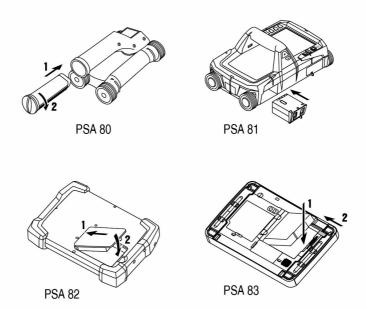
1. If the following equipment exists, also take this action:



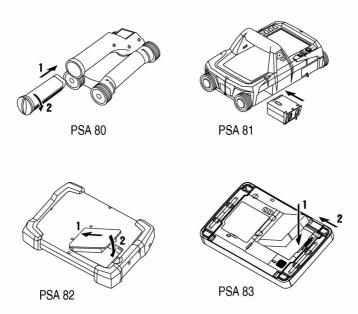
- Hold the battery end cap so that it is facing you and the large groove on the battery is on the left.
- Slide the battery into the battery compartment.
- Turn the end cap clockwise until it engages.



- Push the battery in until it engages securely.
- ▶ Check that the battery is securely seated in the tool.



- ▶ Insert the battery at an angle into the battery compartment.
- ▶ Push the battery into the battery compartment until it is heard to engage.
- ▶ Check that the battery is securely seated in the tool.

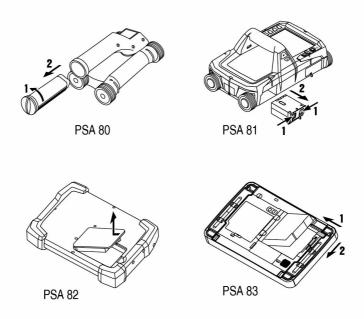


- ▶ Insert the end of the battery in the battery compartment.
- ▶ Push the battery into the battery compartment until it is heard to engage.
- ▶ Push the small slider on the back toward the battery compartment.
- ▶ Check that the battery is securely seated in the tool.

# 5.2 Removing the battery

1. If the following equipment exists, also take this action:

**PSA 80** 



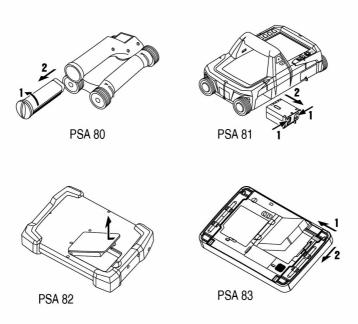
- ▶ Turn the end cap counterclockwise.
- ▶ Remove the battery from the tool.



## Note

Remove the battery only when the tool is switched off. Data may otherwise be lost.

PSA 81



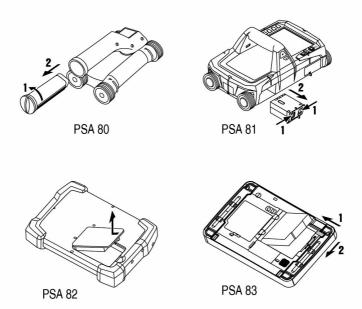
- ► Press the catch together.
- Remove the battery.



## Note

Remove the battery only when the tool is switched off. Data may otherwise be lost.

PSA 82

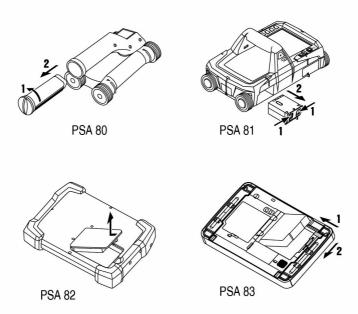


- ▶ Press the spring catch in.
- Remove the battery.



## Note

The battery can be exchanged while the tool is in operation. The built-in backup battery is capable of powering the tool for approx. 5 minutes.

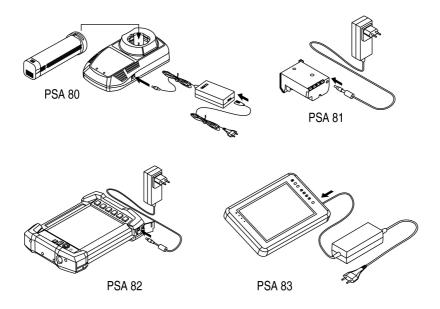


- ▶ Push the small slider on the back away from the battery compartment.
- ▶ Push the large slider toward the small slider.
- ► Remove the battery.

## 5.3 Charging the battery

1. If the following equipment exists, also take this action:

PSA 8



- ▶ Make sure the system to be charged is standing securely.
- ▶ Remove the battery. → page 13
- ► Connect the AC adapter to the charger.
- Plug the country-specific supply cord into the AC adapter.
  - □ 1 LED lights green.
- Insert the battery in the charger.
  - □ 1 LED lights red.
  - The battery is charging.

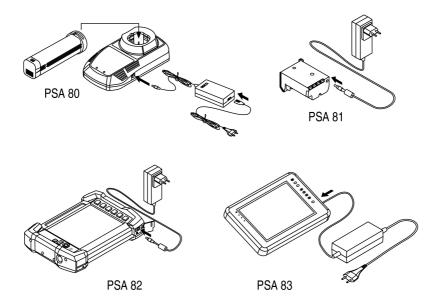


### Note

Charge the battery for at least 14 hours before using it for the first time.

- When the battery is fully charged, disconnect the battery from the charger.
- Insert the battery in the tool. → page 9

PSA 81



- Make sure the system to be charged is standing securely.
- ► Remove the battery. → page 13
- Connect the PUA 81 AC adapter to the battery.



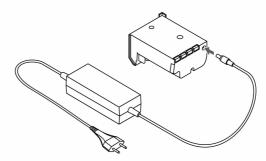
### Note

Charge the battery for at least 2 hours before using it for the first time.

Alternatively, you can use the motor vehicle power adapter to charge the PUA 82 battery.

- Press the button on the top of the battery.
  - Charge status is displayed
- ▶ Insert the battery in the tool. → page 9

PSA 81 (05)



- ▶ Make sure the system to be charged is standing securely.
- ► Remove the battery. → page 13
- ► Connect the PUA 85 19V AC adapter to the battery.
  - The battery is charging.



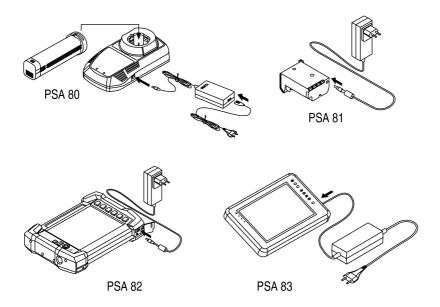
## Note

Charge the battery for at least 2 hours before using it for the first time.

Alternatively, you can use the PUA 82 or PUA 86 19V motor vehicle power adapter or the PUA 81 AC adapter to charge the battery.

- Press the button on the top of the battery.
  - Charge status is displayed
- ▶ Insert the battery in the tool. → page 9

PSA 82



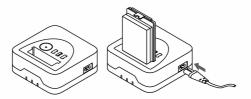
- Make sure the system to be charged is standing securely.
- ▶ Insert the battery in the tool. → page 9
- ▶ Open the charging cord socket on the upper side of the monitor.
- ▶ Connect the PUA 81 AC adapter to the charging cord socket.
  - The battery is charging



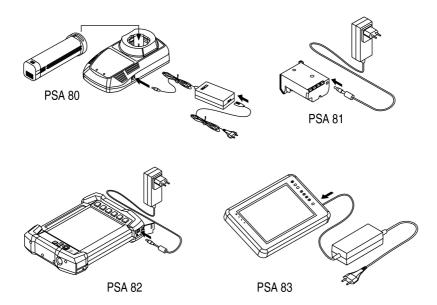
### Note

You can charge the PSA 82 battery in the tool no matter whether the tool is switched on or off. Alternatively, you can charge the PSA 82 battery with the PSA 85 charger (available separately) or with the PUA 82 motor vehicle power adapter. The PSA 85 charger is used to charge the battery when it is not in the tool. The PUA 82 motor vehicle power adapter is used to charge the battery when it is in the tool.

- When the battery is fully charged, disconnect the AC adapter.
- ▶ Close the charging cord socket.



- ▶ Make sure the system to be charged is standing securely.
- ► Remove the battery. → page 13
- ▶ Insert the battery in the PSA 85 charger.
- ▶ When the battery is fully charged, remove the battery from the charger.
- ▶ Insert the battery in the tool.  $\rightarrow$  page 9



- Make sure the system to be charged is standing securely.
- ▶ Insert the battery in the tool. → page 9
- Connect the PUA 85 19V AC adapter to the charging cord socket at the side of the tablet.
  - The battery is charging.
- Disconnect the charger when the battery is fully charged.

# 6 Care and maintenance of cordless tools



### WARNING

**Risk of electric shock!** Attempting care and maintenance with the battery fitted in the tool can lead to severe injury and burns.

Always remove the battery before carrying out care and maintenance tasks!

### Care and maintenance of the tool

- · Carefully remove any dirt that may be adhering to parts.
- · Clean the air vents carefully with a dry brush.
- Use only a dry cloth to clean the housing. Do not use cleaning agents containing silicone as these may attack the plastic parts.

## Care of the lithium-ion batteries

- Keep the battery free from oil and grease.
- Use only a dry cloth to clean the housing. Do not use cleaning agents containing silicone as these may attack the plastic parts.
- · Avoid ingress of moisture.

#### Maintenance

- Check all visible parts and controls for signs of damage at regular intervals and make sure that they all function correctly.
- Do not operate the battery-powered tool if signs of damage are found or if parts malfunction. Have the
  tool repaired by Hilti Service immediately.
- · After cleaning and maintenance, fit all guards or protective devices and check that they function correctly.



#### Note

To help ensure safe and reliable operation, use only genuine Hilti spare parts and consumables. Spare parts, consumables and accessories approved by Hilti for use with the product can be found at your local **Hilti** Center or online at: **www.hilti.com** 

## 7 Disposal

Most of the materials from which **Hilti** tools and appliances are manufactured can be recycled. The materials must be correctly separated before they can be recycled. In many countries, your old tools, machines or appliances can be returned to **Hilti** for recycling. Ask **Hilti** Service or your Hilti representative for further information.



Disposal of electric tools or appliances together with household waste is not permissible.

### 8 Manufacturer's warranty

Please contact your local Hilti representative if you have questions about the warranty conditions.

## 9 FCC statement / IC statement

**CAUTION** This product has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. These products generate, use and can radiate high frequencies and, if not installed and used in accordance with the instructions, may cause interference to radio communications.

There is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the product off and on, the user is encouraged to try to correct the interference by taking the following measures:

- Re-orient or move the receiving antenna.
- Increase the distance between the product and receiver.
- ► Connect the product to a power outlet on a circuit other than that to which the receiver is connected.
- Consult your dealer or an experienced TV / radio technician for assistance.

Changes or modifications not expressly approved by **Hilti** may restrict the user's right to operate the product. This product complies with the requirements in Paragraph 15 of the FCC Rules and RSS 210 of IC.

Operation of the product is subject to the following conditions:

- ▶ This product should cause no harmful interference.
- This product must accept any interference received, including interference that may cause undesired operation.







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