

HILTI

**PSA 81/82/85,
PUA 81/82**

Operating instructions

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Mode d'emploi

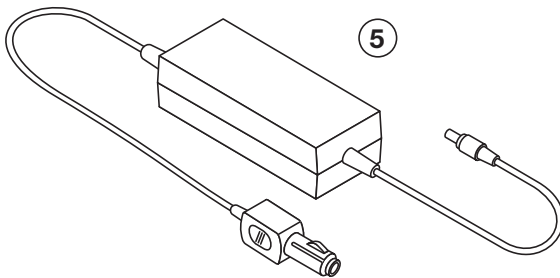
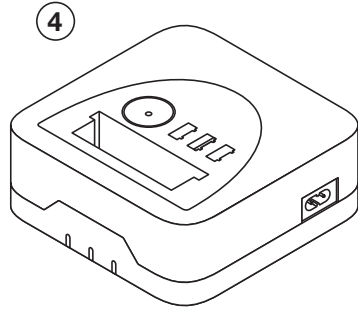
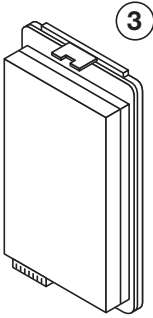
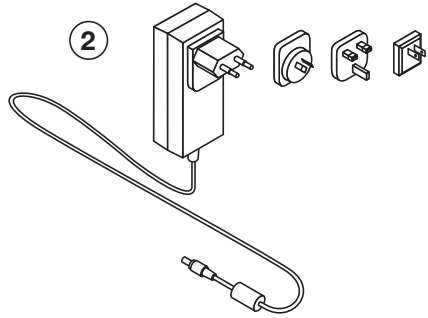
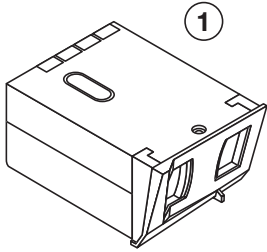
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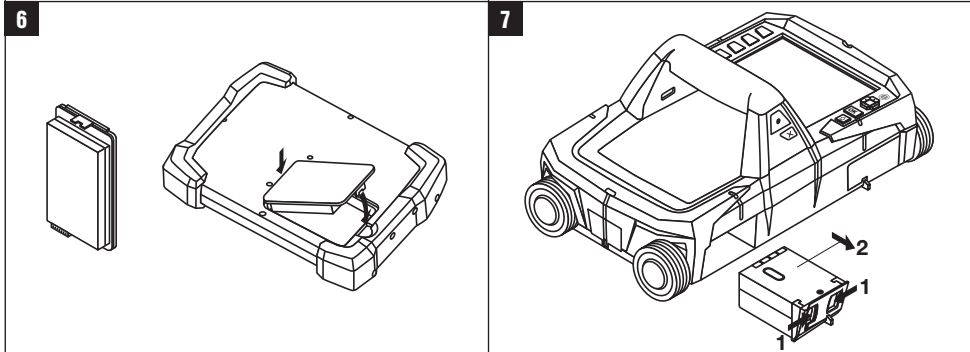
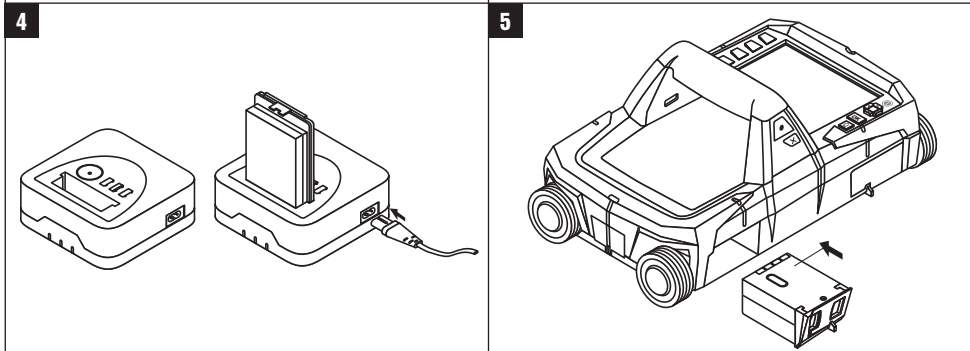
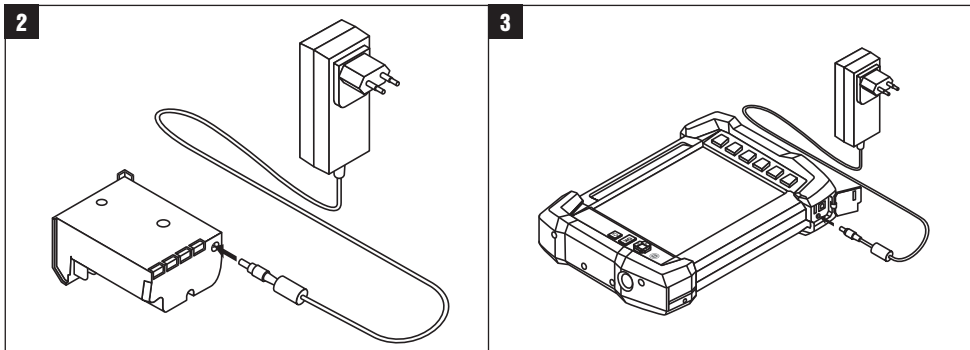
Manual de instrucciones

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Manual de instruções

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ORIGINAL OPERATING INSTRUCTIONS

PSA 81/82, PSA 85, PUA 81, PUA 82 batteries, charger, ac adapter, motor vehicle power adapter

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It is essential that the operating instructions are read before the using the appliance for the first time.

Always keep these operating instructions together with the appliance.

Ensure that the operating instructions are with the appliance when it is given to other persons.

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■ These numbers refer to the corresponding illustrations. The illustrations can be found on the fold-out cover pages. Keep these pages open while studying the operating instructions.

Accessories **■**

- ① PSA 81 battery
- ② PUA 81 mains adapter
- ③ PSA 82 battery
- ④ PSA 85 charger
- ⑤ PUA 82 motor vehicle adapter

1. General information

1.1 Safety notices and their meaning

DANGER

Draws attention to imminent danger that will lead to serious bodily injury or fatality.

WARNING

Draws attention to a potentially dangerous situation that could lead to serious personal injury or fatality.

CAUTION

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

NOTE

Draws attention to an instruction or other useful information.

1.2 Explanation of the pictograms and other information

Warning signs

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General warning



Warning: electricity



Warning: caustic substances



Warning: explosive substances

Symbols



For indoor use only



Read the operating instructions before use.



The disposal of batteries with household waste is not permissible.



Return waste material for recycling.

Location of identification data on the appliance

The type designation and serial number can be found on the type identification plate on the appliance. Make a note of this data in your operating instructions and always refer to it when making an enquiry to your Hilti representative or service department.

2. Description

2.1 Use of the product as directed

The PSA 81 battery powers the Hilti PS 1000 X-Scan. This rechargeable Li-ion battery can be charged (after removing it from the tool) using the PUA 81 mains adapter or the PUA 82 motor vehicle adapter.

The PSA 82 battery powers the Hilti PSA 100 monitor. This rechargeable Li-ion battery can be charged (without need to remove it from the tool) using the PUA 81 mains adapter or the PUA 82 motor vehicle adapter. Alternatively, the PSA 82 battery can be removed from the tool and charged using the PSA 85 charger.

The PSA 85 charger is used to charge the PSA 82 battery.

The PUA 81 mains adapter is used to charge the PSA 81 battery, to charge the PSA 82 battery while fitted to the PSA 100 monitor (when switched off or in operation) and to charge the PRA 84 battery (battery for the Hilti PRE 3 and PR 35 rotating lasers).

The PUA 82 motor vehicle adapter is used to charge the PSA 81 battery, to charge the PSA 82 battery while fitted to the PSA 100 monitor (when switched off or in operation) and to charge the PRA 84 battery. Do not use batteries, mains adapters, and other accessories that are visibly damaged. Do not charge batteries outdoors and in damp environments.

The appliance and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.

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

To avoid the risk of injury, use only genuine Hilti tools and accessories.

Observe the information printed in the operating instructions concerning operation, care and maintenance.

Take the influences of the surrounding area into account. Do not use the power tool or appliance where there is a risk of fire or explosion.

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

Modification of the appliance or tampering with its parts is not permissible.

Use of these products for purposes other than those recommended by Hilti, or use together with other products that are unsuitable for the purpose, is not permissible. Failure to observe this point may render

the warranty null and void. Hilti accepts no liability for loss or damage occurring as a result of failure to observe this point.

3. Charging indicators

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3.1 PSA 81 battery

The PSA 81 battery is equipped with five LEDs that indicate the state of charge. The battery's state of charge can be displayed by pressing the button on the top of the battery. Up to four green LEDs then light for a few seconds; the more LEDs that light, the better is the battery's state of charge. The LEDs blink green while the battery is charging.

LEDs light constantly	LEDs blink	Charge state C
LED 1,2,3,4	-	$C \geq 75 \%$
LED 1,2,3	-	$50 \% \leq C < 75 \%$
LED 1,2	-	$25 \% \leq C < 50 \%$
LED 1	-	$1 \% \leq C < 25 \%$
Error	-	Indicates a fault

NOTE

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

The fifth LED (red) lights when the battery is in an unsuitable state for charging. This may be due to the following faults:

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

3.2 PSA 82 battery - charging the battery in the tool using the PUA 81 mains adapter or PUA 82 motor vehicle adapter

The charging LED on the PSA 100 monitor can indicate the following states:

- The green LED lights: The battery is fully charged
- The green LED blinks: The battery is charging
- The red LED lights: Charging fault - the battery is not charging
- LED doesn't light in operating mode: The battery is discharging

3.3 PSA 82 battery – external charging using the PSA 85 charger

The charging LED can indicate the following states:

- Green LED: The battery is fully charged
- Orange LED: The battery is charging
- Red LED: Charge state < 25%

4. Technical data

Right of technical changes reserved.

PSA 81 Li-ion battery (for PS 1000 X-Scan)

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Rated voltage (normal mode)	7.4 V
Operating voltage	6.0...8.4 V
Input voltage	12 V DC: Max. 3 A
Capacity	37 Wh: Max. 5,200 mAh
Charging time	3 h 05 min at 25°C (77°F)
IP protection class	IP 56
Operating temperature range	-15...+50°C (+5...+122 °F)
Storage temperature range (dry)	-25...+60°C (-13...+140 °F)
Charging temperature	+0...+40°C (+32...+104 °F)
Weight	0.3 kg (0.66 lb)
Dimensions (L x W x H)	94 x 68 x 45 mm (3.7 x 2.7 x 1.8")

PSA 82 Li-ion battery (for the PSA 100 monitor)

Rated voltage (normal mode)	7.4 V
Maximum voltage	4.3 V
Capacity	35.5 Wh: Max. 4,800 mAh
Charging time	3 h at 25°C (77°F)
IP protection class	IP 56
Operating temperature range	-15...+60°C (+5...+140 °F)
Storage temperature range (dry)	-25...+60°C (-13...+140 °F)
Recommended storage temperature range (dry)	+15...+25°C (+59...+77 °F)
Charging temperature	+0...+45°C (+32...+113 °F)
Weight	0.24 kg (0.53 lb)
Dimensions (L x W x H)	119 x 77 x 21 mm (4.7 x 3.0 x 0.8")

PUA 81 AC adapter (for PSA 81 and PRA 84 batteries, PSA 100 monitor)

Rated supply current	115...230 V
AC frequency	47...63 Hz
Rated power	36 W
Rated voltage	12 V
IP protection class	IP 56
Operating temperature range	+0...+40°C (+32...+104 °F)
Storage temperature range (dry)	-25...+60°C (-13...+140 °F)
Charging temperature	+0...+40°C (+32...+104 °F)
Weight	0.23 kg (0.51 lb)
Dimensions (L x W x H)	110 x 50 x 32 mm (4.3 x 2.0 x 1.3")

PSA 85 charger (PSA 82 battery)

AC supply	100...240 V
AC frequency	47...63 Hz
Rated power	40 W

Rated voltage	8.4 V
IP protection class	IP 56
Operating temperature range	-20...+40°C (-4...+104 °F)
Storage temperature range (dry)	-25...+85°C (-13...+185 °F)
Charging temperature	+0...+45°C (+32...+113 °F)
Weight	0.54 kg (1.19 lb)
Dimensions (L x W x H)	143 x 143 x 48 mm (5.6 x 5.6 x 1.9")

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PUA 82 AC motor vehicle power adapter (for PSA 81 and PRA 84 batteries, PSA 100 monitor)

Input voltage	11...36 V
Rated power	36 W
Rated voltage	12 V
IP protection class	IP 54
Operating temperature range	+0...+40°C (+32...+104 °F)
Storage temperature range (dry)	-20...+85°C (-4...+185 °F)
Charging temperature	+0...+40°C (+32...+104 °F)
Weight	0.24 kg (0.53 lb)
Dimensions (L x W x H)	105 x 40 x 26.5 mm (4.1 x 1.6 x 1.0")

5. Safety instructions

In addition to the information relevant to safety given in each of the sections of these operating instructions, the following points must be strictly observed at all times.

Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

5.1 General safety rules



- a) Do not render safety devices ineffective and do not remove information and warning notices.
- b) Do not use force when inserting a battery in a tool or appliance.
- c) Store appliances in a secure place when not in use. When not in use, appliances must be stored in a dry, high place or locked away out of reach of children.
- d) Follow the instructions concerning care and maintenance.
- e) Use the supply cord only for connecting to the mains supply.
- f) Check to ensure that the appliance and supply cord do not present an obstacle that could lead to a risk of tripping and personal injury.
- g) Check extension cords at regular intervals and replace them if damage is found. Do not touch the mains adapter if the extension cord or mains adapter are damaged while working. Disconnect the supply cord plug from the power outlet. Damaged supply cords present a risk of electric shock.
- h) Do not expose the supply cord to heat, oil or sharp edges.
- i) Never operate the mains adapter when it is dirty or wet. Dust (especially dust from conductive materials) or dampness adhering to the surface of the mains adapter may, under unfavorable conditions, lead to electric shock. Dirty or dusty appliances should thus be checked at a Hilti service center at regular intervals, especially if used frequently for working on conductive materials.
- j) Avoid touching the contacts.

5.2 Battery tool use and care



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- a) **Check that the tool or appliance is switched off before fitting the battery.** Use only the Hilti batteries approved for use with the tool or appliance.
- b) **Do not expose batteries to high temperatures or fire.** This presents a risk of explosion.
- c) **Do not disassemble, squash or incinerate batteries and do not subject them to temperatures over 75°C (167°F).** This presents a risk of fire, explosion or injury through contact with caustic substances.
- d) **Avoid ingress of dampness.** Dampness may cause a short circuit resulting in a risk of burning injury or fire.
- e) Do not use batteries other than those approved for use with the applicable tool or appliance. Use of other batteries or use of a battery for purposes for which it is not intended presents a risk of fire and explosion.
- f) **Observe the special instructions applicable to the transport, storage and use of Li-ion batteries.**
- g) **Avoid short circuiting the battery terminals.** Check that the terminals on the battery and in the tool or appliance are free from foreign objects before inserting the battery. Short circuiting the battery terminals presents a risk of fire, explosion and chemical burns.
- h) **Do not charge or continue to use damaged batteries (e.g. batteries with cracks, broken parts, bent or pushed-in and/or pulled-out contacts).**
- i) **Use only the PUA 81 mains adapter, PSA 85 charger or PUA 82 motor vehicle adapter to power the tool or appliance or, respectively, to**

charge the battery. Failure to observe this point presents a risk of damaging the tool or appliance.

- j) Remove the battery from the tool or appliance if it is to remain unused for some time. Batteries are subject to self-discharge and may begin to corrode if stored for a long period.

5.3 Proper organization of the work area

- a) **Ensure that the workplace is well lit.**
- b) **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- c) Keep children away from the area. Do not allow other persons to touch the appliance.

5.4 Electrical



- a) **Protect yourself from electric shock. Avoid body contact with earthed or grounded objects such as pipes, radiators, kitchen ranges and refrigerators.**
- b) Although the tool or appliance complies with the strict requirements of the applicable directives, Hilti cannot rule out the possibility of interference to other equipment (e.g. aircraft navigation systems).

5.5 Liquids



Caustic liquids may leak from defective batteries. Avoid contact with these liquids. In case of skin contact, wash the area affected with soap and plenty of water. In case of eye contact, rinse the eyes immediately with water and subsequently consult a doctor.

6. Before use



6.1 Battery use and care

NOTE

Store the battery in a cool, dry place. Never store the battery where it is exposed to the heat of the sun, on a radiator or behind glass, e.g. at a window. Batteries that have reached the end of their life must be disposed of safely and correctly to avoid environmental pollution.

6.2 Charging a battery

DANGER

Use only the specified Hilti batteries, Hilti mains adapters and Hilti chargers as described in the applicable instructions for correct use.

6.2.1 Charging a new PSA 81 battery for the first time

Charge the PSA 81 battery fully with the PUA 81 mains adapter. The battery must be charged for at least 2 hours before initial use.

NOTE

Make sure the system to be charged is standing securely.

The PSA 81 battery's state of charge can be displayed by pressing the button on the top of the battery.

6.2.2 Charging a previously used PSA 81 battery

NOTE

Ensure that the outer surfaces of the battery are clean and dry before inserting it in the appliance.

Lithium-ion batteries are ready for use at any time, even when only partially charged. During charging, charging progress is indicated by the LEDs on the tool.

6.2.3 Charging a PSA 82 battery

NOTE

The battery must be charged for at least 2 hours before initial use.

1. Insert the PSA 82 at the rear of the Hilti PSA 100 monitor.
2. Open the cover over the charging connector on the upper part of the appliance and connect the PUA 81 mains adapter. Charge the PSA 82 battery fully.

NOTE Alternatively, the PSA 82 battery can be removed from the PSA 100 monitor and charged using the separately available PSA 85 charger.

The battery can be charged while the appliance is in operation. The current state of charge is indicated by the battery symbol in the display. At a state of less than 25% the color of the band turns to red. The battery should be recharged.

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7. Operation



7.1 Inserting the battery

DANGER

Use only the specified Hilti batteries, Hilti mains adapters and Hilti chargers as described in the applicable instructions for correct use.

CAUTION

Before inserting the battery in the tool or appliance, check that the terminals of the battery and the tool or appliance are free from foreign objects.

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7.1.1 Inserting the PSA 81 battery 5

CAUTION

The battery must fit easily into the tool. Do not apply force when inserting the PSA 81 battery. The battery and the tool or appliance may suffer damage.

Push the PSA 81 battery into the battery compartment until it engages.

7.1.2 Inserting the PSA 82 battery 6

Insert the end of the battery, tilted at an angle, into the battery compartment and then push the battery down into the recess until the spring catch engages.

7.2 Removing the battery

7.2.1 Removing the PSA 81 battery 7

WARNING

Do not remove the PSA 81 battery while the tool is in operation. This could cause loss of data. Remove

the PSA 81 battery only when the tool is switched off.

Press the catch in until the battery can be removed without resistance.

7.2.2 Removing the PSA 82 battery

CAUTION

The PSA 82 battery must fit easily into the PSA 100 monitor. Do not apply force when inserting the battery. Use of force may result in damage to the PSA 82 battery or PSA 100 monitor unit.

NOTE

The PSA 82 battery can be changed while the appliance is in operation. The built-in back-up battery maintains operation for approx. 5 minutes.

Press the spring catch in until the PSA 82 battery can be removed without resistance.

7.3 Options for charging the battery



DANGER

The PUA 81 mains adapter and the PSA 85 charger are for indoor use only. Do not allow moisture to enter the equipment.

7.3.1 Charging the PSA 82 battery in the tool (when switched-off) 8

NOTE

When charging, check that the temperature is within the recommended charging temperature range (0 to 40°C/ 32 to 104°F).

1. Open the cover on the PSA 100 monitor providing access to the charging connector.
2. Plug the cord from the PUA 81 AC adapter or PUA 82 motor vehicle power adapter into the charging connector.

During charging, the state of charge is indicated by the LEDs on the tool.

The charging LED can indicate the following states:	The green LED lights.	The battery is fully charged.
	The green LED blinks.	The battery is charging.
	The red LED lights.	Charging fault - the battery is not charging.

7.3.2 Charging the PSA 82 battery outside the tool 9

NOTE

When charging, check that the temperature is within the recommended charging temperature range (0 to 40°C/ 32 to 104°F).

1. Remove the PSA 82 battery from the tool.
2. Plug the supply cord into the PSA 85 charger and then connect it to the electric supply.
3. Insert the PSA 82 battery in the charger.
4. The LED on the PSA 85 charger lights while charging is taking place.

7.3.3 Charging the PSA 82 battery while the tool is in operation

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CAUTION

Avoid ingress of moisture. Moisture may cause a short circuit resulting in a risk of burning injury or fire.

1. Open the cover on the PSA 100 monitor providing access to the charging connector.
 2. Plug the cord from the PUA 81 mains adapter or PUA 82 motor vehicle adapter into the charging connector.
- During charging, the state of charge is indicated by the LEDs on the tool.

The charging LED can indicate the following states:	The green LED lights.	The battery is fully charged.
	The green LED blinks.	The battery is charging.
	The red LED lights.	Charging fault - the battery is not charging.

The current state of charge can be read from the status area of the display.

8. Care and maintenance

CAUTION

Disconnect the supply cord plug from the power outlet.

8.1 Cleaning and drying

Use only a clean, soft cloth for cleaning. If necessary, moisten the cloth slightly with pure alcohol or a little water.

NOTE

Do not use any other liquids as these may damage the plastic components.

Observe the temperature limits when storing your equipment (-30°C to +60°C (-22°F to +140°F)). This is particularly important in winter / summer if the equipment is kept inside a motor vehicle.

8.2 Care of Li-ion batteries

Do not allow moisture to enter the batteries.
Charge the batteries fully before using them for the first time.

In order to achieve maximum battery life, stop using the battery as soon as a significant drop in performance is noticed.

NOTE

If use of the power tool or appliance continues, battery discharge is stopped automatically (indicated by LED 1 blinking) before the battery cells suffer damage.

Charge the batteries with the Hilti chargers approved for use with Li-ion batteries.

NOTE

- A conditioning charge (as is required with NiCd or NiMH batteries) is not necessary.

- Interruption of the charging procedure has no negative effect on battery life.

- Charging can be started at any time, irrespective of battery charge state, without any negative effect on battery life. There is no memory effect (as with NiCd or NiMH batteries).

- For best results, batteries should be stored fully charged in a cool dry place. Avoid charging batteries

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in places subject to high ambient temperatures (e.g. at a window) as this has an adverse effect on battery life and increases the rate of self-discharge.

- If a battery no longer reaches full charge, it may have lost capacity due to aging or overstraining. It is possible to continue working with a battery in this condition but it should be replaced in good time.

8.3 Storage

Remove the tool from its case if it has become wet. The tool, its carrying case and accessories should

be cleaned and dried (at maximum 40°C (104°F)). Repack the equipment only once it is completely dry. Check the accuracy of the equipment before it is used after a long period of storage or transportation.

Remove the batteries from the tool before storing it for a long period. Leaking batteries may damage the tool.

8.4 Transport

Use the Hilti toolbox or packaging of equivalent quality for transporting or shipping your equipment.

CAUTION

Always remove the batteries before shipping the tool or appliance.

9. Disposal

CAUTION

Improper disposal of the equipment may have serious consequences: The burning of plastic components generates toxic fumes which may present a health hazard. Batteries may explode if damaged or exposed to very high temperatures, causing poisoning, burns, acid burns or environmental pollution. Careless disposal may permit unauthorized and improper use of the equipment. This may result in serious personal injury, injury to third parties and pollution of the environment.



Most of the materials from which Hilti tools or appliances are manufactured can be recycled. The materials must be correctly separated before they can be recycled. In many countries, Hilti has already made arrangements for taking back old tools and appliances for recycling. Ask Hilti customer service or your Hilti representative for further information.



For EC countries only

Disposal of electrical appliances together with household waste is not permissible.

In observance of European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in accordance with national law, electrical appliances that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.



Dispose of the batteries in accordance with national regulations.

10. Manufacturer's warranty

Hilti warrants that the tool supplied is free of defects in material and workmanship. This warranty is valid so long as the tool is operated and handled correctly, cleaned and serviced properly and in accordance with the Hilti Operating Instructions, and the technical system is maintained. This means that only original Hilti consumables, components and spare parts may be used in the tool.

This warranty provides the free-of-charge repair or replacement of defective parts only over the entire lifespan of the tool. Parts requiring repair or replacement as a result of normal wear and tear are not covered by this warranty.

Additional claims are excluded, unless stringent national rules prohibit such exclusion. In particular, Hilti is not obligated for direct, indirect, incidental or consequential damages, losses or expenses in connection with, or by reason of, the use of, or inability to use the tool for any purpose. Implied warranties of merchantability or fitness for a particular purpose are specifically excluded.

For repair or replacement, send the tool or related parts immediately upon discovery of the defect to the address of the local Hilti marketing organization provided.

This constitutes Hilti's entire obligation with regard to warranty and supersedes all prior or contemporaneous comments and oral or written agreements concerning warranties.

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11. FCC statement / IC statement

11.1 FCC statement (applicable in US) / IC statement (applicable in Canada)

CAUTION

This equipment 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. This equipment generates, uses and may radiate radio frequency energy. Accordingly, if not installed and used in accordance with the instructions, it may cause harmful interference to radio communications.

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

Re-orient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Consult the dealer or an experienced TV/radio technician for assistance.

NOTE

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

This device complies with the requirements defined in RSS-220 in conjunction with RSS-Gen of IC.

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

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