

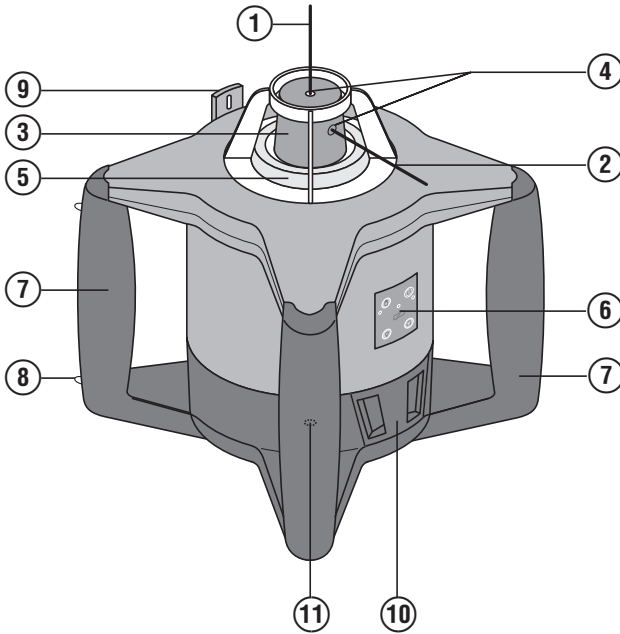
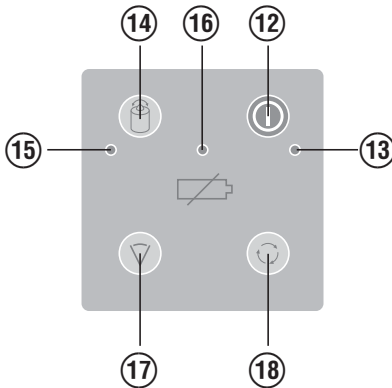
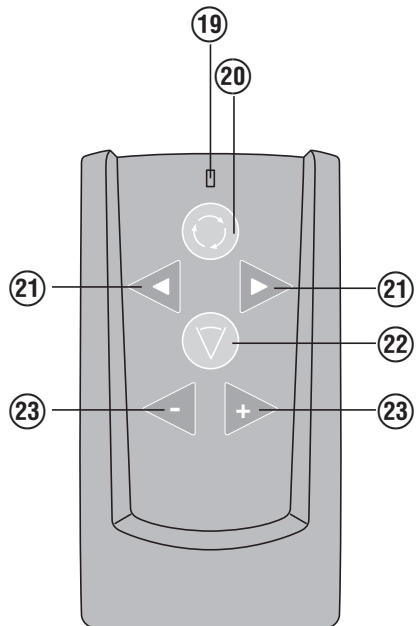
HILTI

PRI 2

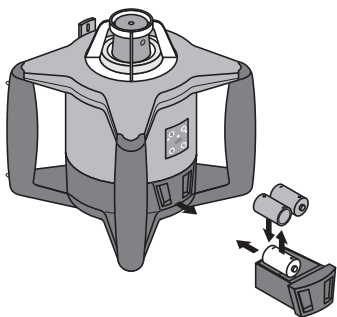


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Пайдалану бойынша басшылық	kk
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사용설명서	ko
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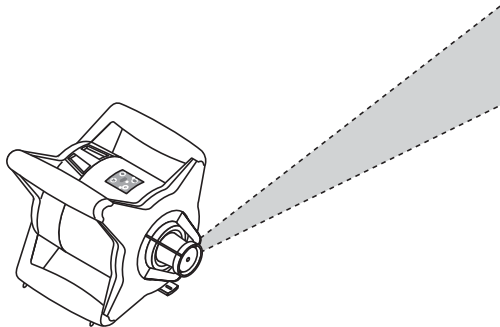


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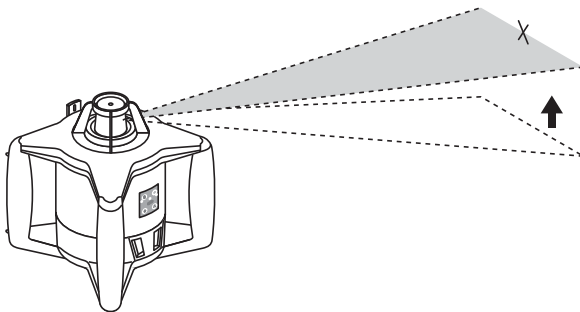
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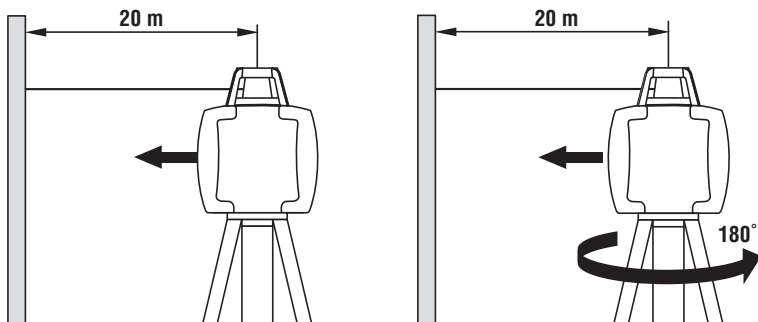
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ORIGINAL OPERATING INSTRUCTIONS

PRI 2 rotating laser

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It is essential that the operating instructions are read before the tool is operated for the first time.

Always keep these operating instructions together with the tool.

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

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I 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.

In these operating instructions, the designation "the tool" always refers to the PRI 2 rotating laser.

Components, operating controls and indicators **I**

PRI 2 rotating laser

- ① 90° reference beam
- ② Laser beam (plane of rotation)
- ③ Rotating head
- ④ Laser exit aperture
- ⑤ Infrared receiving window
- ⑥ Control panel
- ⑦ Grips
- ⑧ Pins
- ⑨ Vertical reference indicator
- ⑩ Battery compartment
- ⑪ Base plate with 5/8" thread

PRI 2 control panel **2**

- ⑫ On/off, shock warning deactivation
- ⑬ On /off LED
- ⑭ Slope activation button
- ⑮ Slope LED
- ⑯ Battery condition indicator LED
- ⑰ Line function button
- ⑱ Speed of rotation button

PRA 2 remote control unit **3**

- ⑲ "Command sent" LED
- ⑳ Speed of rotation button
- ㉑ Direction buttons (left / right)
- ㉒ Line function button
- ㉓ Servo button (for adjusting alignment)

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



General warning



Warning: explosive substances



Warning: caustic substances



Warning: electricity

Symbols

/min

Revolutions per minute



Read the operating instructions before use.



Return waste material for recycling.

On the tool



Do not stare into the beam.

Laser warning plates for the USA in accordance with CFR 21 § 1040 (FDA).

On the tool



Laser warning plate in accordance with IEC825 / EN60825-1:2003

Location of identification data on the tool

The type designation and serial number can be found on the type identification plate on the tool. 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.

Type: _____

Serial no.: _____

2 Description

2.1 Use of the product as directed

The Hilti PRI 2 is a laser tool with a rotating laser beam and a reference beam set at 90° to the main beam.

The tool is intended mainly for indoor use. When used for outdoor applications, care must be taken to ensure that the general conditions are similar to those encountered indoors.

The tool is designed to be used for determining, checking / transferring levels, verticals, alignment, plumb points, slopes and right angles, for example:

Transferring datum lines and heights,

Marking out partition walls (vertical and/or at right angles)

Aligning systems and facilities in three axes.

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

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

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

Modification of the tool is not permissible.

2.2 Features

The tool allows a single person to level or align in any plane quickly and with great accuracy. Automatic leveling (within ±5° inclination): The tool levels itself automatically after switching on. LEDs indicate each operating status. The tool can be set up directly on the floor, on a tripod, or on the PRA 70/71 wall bracket.

2.3 Combination with the PRA 2 remote control unit

The PRA 2 remote control unit can be used to control the PRI 2 rotating laser conveniently from a distance. The remote control function can also be used to adjust alignment of the laser beam.

2.4 Combination with the PRA 22 laser receiver

The PRA 22 laser receiver facilitates indication of the laser beam at great distances. For further information, please refer to the PRA 22 operating instructions.

NOTE

Depending on the version purchased, the PRA 22 laser receiver may not be included among the items supplied.

2.5 Speed of rotation

There are 5 different speeds of rotation (0, 90, 150, 300 or 600 revolutions per minute)

When rotation is switched off, the laser can be aligned manually.

2.6 Horizontal plane (automatic leveling)

After switching on, the tool levels itself automatically in all directions by way of 2 built-in servo motors.

2.7 Vertical plane (automatic leveling)

Vertical alignment is carried out automatically. The servo buttons can be used to align (pivot) the vertical plane manually.

2.8 Inclined planes

The inclination (slope) can be set manually in the horizontal mode. This function is activated by pressing the slope button. The servo buttons can be used to manually incline the horizontal plane.

2.9 Automatic cut-out

When automatic leveling is activated for one or both axes, the built-in servo system ensures that the specified accuracy is maintained.

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The tool switches itself off if leveling is unsuccessful (when the tool is set up outside its self-levelling range or movement is blocked mechanically).

The tool switches itself off when knocked off level (vibration / impact).

When the tool has switched itself off, rotation stops and all LEDs blink.

2.10 Increasing the visibility of the laser beam

Depending on the working distance and ambient light, visibility of the laser beam may be impaired.

The PRA 50/ 51 target plate and/or the PUA 60 laser visibility glasses can be used to improve laser beam visibility.

When laser beam visibility is reduced due to bright sunshine, for example, we recommend use of the PRA 22 laser receiver (accessory).

2.11 Items supplied with the PRI 2 rotating laser

- 1 PRI 2 rotating laser
- 1 PRA 2 remote control unit
- 1 PRA 50/ 51 target plate
- 1 Operating instructions
- 1 Manufacturer's certificate
- 4 Batteries
- 1 Hilti toolbox

2.12 Items supplied with the PRI 2 / PRA 22 rotating laser with laser receiver

- 1 PRI 2 rotating laser
- 1 PRA 2 remote control unit
- 1 PRA 22 laser receiver
- 1 PRA 50/ 51 target plate
- 2 Operating instructions
- 2 Manufacturer's certificates
- 5 Batteries
- 1 Hilti toolbox

3 Accessories

Designation	Short designation
Receiver	PRA 22
Target plate	PRA 50/ 51
Laser receiver holder	PRA 77
Wall mount	PRA 70/71
Battery charger	PUA 80
Battery	PRA 82
Various tripods	All Hilti tripods are equipped with a $\frac{5}{8}$ " thread
Measuring staff	All Hilti measuring staffs
Laser visibility glasses	PUA 60

4 Technical data

Right of technical changes reserved.

NOTE

Right of technical changes reserved.

Range of remote control unit (circle diameter)	1 ... 60 m (3 - 200 ft)
Range of laser receiver (circle diameter)	With laser receiver: 2...300 m (6 - 1000 ft)
Accuracy	Temperature +24°C (75°F), Horizontal distance 10 m (60 ft): 1 mm ($\frac{3}{32}$ ")
Laser class: Class 3R, visible	635 nm (< 3mW Class 60825-1:2003)
Laser class: class IIIa	635 nm (<3mW 21 CFR FDA § 1040:2006)

90° reference beam	Continuous, perpendicular to the plane of rotation
Speed of rotation	0/min, 90/min, 150/min, 300/min, 600/min
Automatic cut-out	Failure to achieve accuracy of 20" (1mm@10m) within 120 seconds
Self-leveling range	±5° in all directions
Operating status LED indicators	On/off, battery status; Slope
Power supply	2 x alkaline, size D
Battery life	Temperature +25°C (+77°F), Alkaline manganese: 50 h
Operating temperature range	-20... +50°C (-4 to 122°F)
Storage temperature range	-25... +60°C (-22 to 140°F)
Protection class	IP 54
Tripod thread	5/8" X 11
Weight without batteries	1.55 kg (3.5 lbs)
Dimensions (L x W x H)	188 mm X 188 mm X 194 mm (7.4 " x 7.4 " x 7.6 ")

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.

5.1 Basic information concerning safety

- Operate the tool only as intended and when it is in faultless condition.**
- Do not render safety devices ineffective and do not remove information and warning notices.**
- Operate the tool within the specified temperature range.**
- The laser visibility glasses have no protective function and do not protect your eyes from laser light. As the laser visibility glasses restrict color vision, they should be worn only when working with this tool and must not be worn while driving a vehicle on a public road.**
- Keep laser tools out of reach of children.**
- Failure to follow the correct procedures when opening the tool may cause emission of laser radiation in excess of Class 3R (IIIa). **Have the tool repaired only at a Hilti service center.**
- Take the influences of the surrounding area into account. Do not use the tool where there is a risk of fire or explosion.**

5.2 Proper organization of the work area

- Secure the area in which you are working and take care to avoid directing the beam towards other persons or towards yourself when setting up the tool.**
- Avoid unfavorable body positions when working from ladders. Make sure you work from a safe stance and stay in balance at all times.**
- Measurements taken through panes of glass or other objects may be inaccurate.

- Ensure that the tool is set up on a steady, level surface (not subject to vibration).**
- Use the tool only within its specified limits.**

5.3 Electromagnetic compatibility

Although the tool complies with the strict requirements of the applicable directives, Hilti cannot entirely rule out the possibility of the tool being subject to interference caused by powerful electromagnetic radiation, leading to incorrect operation. Check the accuracy of the tool by taking measurements by other means when working under such conditions or if you are unsure. Likewise, Hilti cannot rule out the possibility of interference with other devices (e.g. aircraft navigation equipment).

5.4 Laser classification for tools of the class 3R (IIIa)

- Tools of the laser class 3R and class IIIa should be operated by trained personnel only.
- The area in which the tool is in use must be marked with laser warning signs.
- The plane of the laser beam should be well above or well below eye height.
- Precautions must be taken to ensure that the laser beam does not unintentionally strike highly reflective surfaces.
- Precautions must be taken to ensure that persons do not stare directly into the beam.
- The laser beam must not be allowed to project beyond the controlled area.
- When not in use, laser tools should be stored in an area to which unauthorized persons have no access.

5.5 General safety rules

- a) Use the right tool for the job. Do not use the tool for purposes for which it was not intended. Use it only as directed and when in faultless condition.
- b) Check the condition of the tool before use. If the tool is found to be damaged, have it repaired at a Hilti service center.
- c) The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.
- d) Check the accuracy of the measurements several times during use of the tool.
- e) When the tool is brought into a warm environment from very cold conditions, or vice-versa, allow it to become acclimatized before use.
- f) If mounting on an adapter, check that the tool is screwed on securely.
- g) Keep the laser exit aperture clean to avoid measurement errors.
- h) Although the tool is designed for the tough conditions of jobsite use, as with other optical and electronic instruments (e.g. binoculars, spectacles, cameras) it should be treated with care.
- i) Although the tool is protected to prevent entry of dampness, it should be wiped dry each time before being put away in its transport container.
- j) To avoid confusion, check to ensure that no other tool of the same or a similar kind is in use in the immediate vicinity.

5.6 Electrical



- a) Keep the batteries out of reach of children.
- b) Do not allow the batteries to overheat and do not expose them to fire. The batteries may explode or release toxic substances.
- c) Do not solder the batteries into the tool.
- d) Do not discharge the batteries by short circuiting as this may cause them to overheat and present a risk of personal injury (burns).
- e) Do not attempt to open the batteries and do not subject them to excessive mechanical stress.
- f) Always replace the complete set of batteries.
- g) To avoid pollution of the environment, the tool must be disposed of in accordance with the currently applicable national regulations. Consult the manufacturer if you are unsure of how to proceed.
- h) Do not use damaged batteries.
- i) Do not mix old and new batteries. Do not mix batteries of different makes or types.

5.7 Liquids

Under abusive conditions, liquid may leak from the battery. **Avoid contact. If contact accidentally occurs, flush with water. In the event of the liquid coming into contact with the eyes, rinse the eyes with plenty of water and consult a doctor.** Liquid ejected from the battery may cause irritation or burns.

6 Before use



DANGER

The tool may be powered only by batteries (type D cells) manufactured in accordance with IEC 285 or by a PRA 82 battery.

CAUTION

If using the rechargeable battery, please read the operating instructions for the battery charger.

DANGER

Use only new batteries.

6.1 Switching the tool on

Press the on/off button.

After switching on, the tool begins the self-levelling procedure automatically and the green on/off LED blinks. After completion of the self-levelling procedure, the laser beam is set to rotate in the normal direction and switches itself on. The laser begins to rotate automatically.

The green LED for the on/off button lights constantly.

6.2 Indicators

LED indicators	On/off - blinks green	The tool is leveling itself.
	On/off - lights green constantly	The tool has leveled itself.
	Slope - lights red constantly	Slope function is active.

LED indicators	On/off blinks red	The shock warning is deactivated.
	All LEDs blink	The tool cannot begin operation; Cause: The tool has been moved - it cannot level itself.
	Battery LED blinks red	Battery power should last a further approx. 2 hours

6.3 Inserting new batteries 4

1. Open the battery compartment by pressing in and pulling the grip on the battery compartment cover.

2. Insert the batteries in the battery compartment. Take care to observe correct polarity.
3. Close the battery compartment cover.

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7 Operation



NOTE

The functions “Speed of rotation” and “Line function” can also be controlled directly from the PRI 2 rotating laser.

7.1 Working with the PRA 2 remote control unit 3

The PRA 2 remote control unit makes working with the rotating laser more convenient and is required in order to make use of certain functions.

7.1.1 Selecting the speed of rotation (revolutions per minute)

After switching on, the PRI 2 rotating laser always begins to operate at a speed of 150 revolutions per minute. Working at a slower speed of rotation can, however, make the laser beam appear much brighter. The speed of rotation can be altered by pressing the speed of rotation control button the required number of times: 0 > 90 > 150 > 300 > 600 > 0.

7.1.2 Line function

The area of the laser beam can be reduced to a line by pressing the line function button. The laser beam then appears considerably brighter. The length of the line can be adjusted by pressing the line function button the desired number of times: 0° > 5° > 10° > 15° > 0°. The length of the line depends on the distance between the laser and the wall or the working surface. The laser line can be shifted to the left or the right, as desired, by pressing the direction buttons (right/left).

7.2 Working with the PRA 22 laser receiver (accessory)

The laser receiver can be used at distances of up to 150 m or when working in unfavorable light. The laser beam is indicated visually and by an audible signal.

NOTE

For further information, please refer to the PRA 22 operating instructions.

7.3 Working in the horizontal plane

In order to work in the horizontal plane, the rotating laser must be set up with the rotation head facing upwards. Set up the tool in a suitable position for the application, e.g. on a tripod.

Press the on/off button.

Shortly before leveling is complete, the laser beam switches on and begins to rotate (at a speed of 150 revolutions per minute).

7.4 Working in the vertical plane 5

To work in the vertical plane, set up the tool so that the rotation head faces to the side. This can be achieved by standing the tool on the pins, so that the control panel faces upwards. Slide the reference indicator upwards. The tool can then be aligned with the aid of the laser reference point. Alternatively, the rotating laser can be mounted on a tripod with the PRA 70/71 wall bracket. Press the on/off button. When leveling is complete, the laser beam switches on and begins to rotate (at a speed of 150 revolutions per minute).

7.5 Vertical alignment of the laser beam

The laser beam can be aligned vertically by pressing the +/- buttons on the remote control unit. Manual alignment of the rotating laser must be carried out exactly.

1. Position the rotating laser on the desired reference point and switch it on.
2. Use the rotation or line function buttons to set the desired function (for example, projection of a medium-sized line).
3. You can then align this line manually. The servo buttons can be used to move the line to the left or to the right (maximum +/-5°).

7.6 Working with slopes 6

1. Mount the tool in a suitable position for the application to be carried out (e.g. on a tripod).

- To set a slope, first press the slope button on the PRI 2 rotating laser. After activating this function by pressing the slope button, the remote control unit can then be used to set the required slope relative to the horizontal plane. The laser beam can be adjusted in the desired direction by pressing the +/- buttons. Self-levelling is deactivated when the slope function is in use.

7.7 Switching off the shock warning

The shock warning can be deactivated by pressing and holding the on/off button when switching on the PRI 2 rotating laser. The on/off button must be pressed for at least 3 seconds. Deactivation of the shock warning is indicated by the on/off LED blinking red.

8 Care and maintenance

8.1 Cleaning and drying

- Blow dust off the lenses.
- Do not touch the laser exit aperture and the filter with the fingers.
- 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. This is particularly important in winter / summer if the equipment is kept inside a motor vehicle (-25°C to +60°C).

8.2 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.

8.3 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.

8.4 Hilti calibration service

We recommend that the tool is checked by the Hilti calibration service at regular intervals in order to verify its

reliability in accordance with standards and legal requirements.

Use can be made of the Hilti calibration service at any time, but checking at least once a year is recommended. The calibration service provides confirmation that the tool is in conformance, on the day it is tested, with the specifications given in the operating instructions.

The tool will be readjusted if deviations from the manufacturer's specification are found. After checking and adjustment, a calibration sticker applied to the tool and a calibration certificate provide written verification that the tool operates in accordance with the manufacturer's specification.

Calibration certificates are always required by companies certified according to ISO 900x.

Your local Hilti Center or representative will be pleased to provide further information.

8.4.1 Checking accuracy

Check the accuracy of the tool in the X-axis and Y-axis as follows:

- Set up the tool horizontally approx. 20 m from a wall (can be on a tripod).
- Mark the point on the wall (mark A). Use the PRA 22 laser receiver or the PRA 50/51 target plate if visibility is poor.
- Pivot the tool 180° about its own axis (use the same axis).
- Mark the point on the wall (mark B). Use the PRA 22 laser receiver or the PRA 50/51 target plate if visibility is poor.

NOTE When the procedure is carried out carefully, the distance between the marks A and B should be less than 4 mm (at 20 m). If the deviation is greater: Send the tool to a Hilti service center for calibration.

9 Disposal

WARNING

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.

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For EC countries only

Do not dispose of electrical appliances together with household waste.

In observance of the European Directive 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 - tools

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.

11 EC declaration of conformity (original)

Designation:	Rotating laser
Type:	PRI 2
Year of design:	2006

We declare, on our sole responsibility, that this product complies with the following directives and standards: 2004/108/EC, 2006/95/EC, 2011/65/EU, EN ISO 12100.

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