

# HILTI

## PR 2-HS

**Operating instructions**

**en**

**Mode d'emploi**

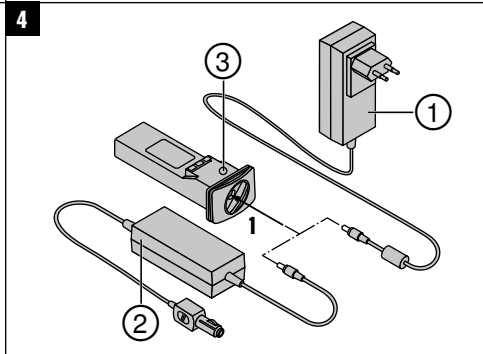
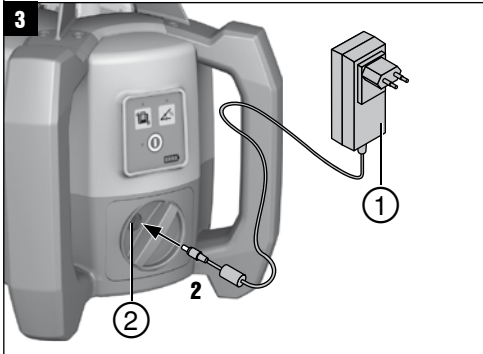
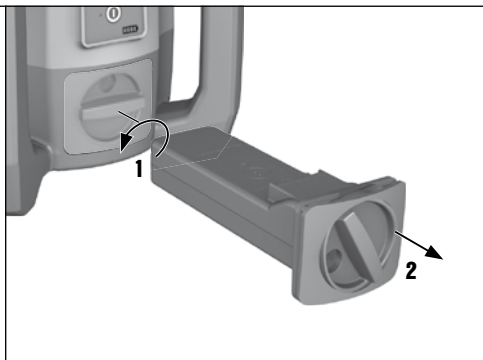
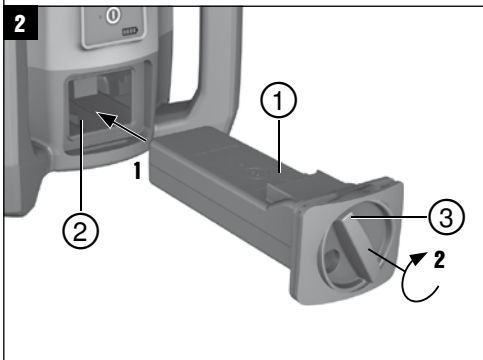
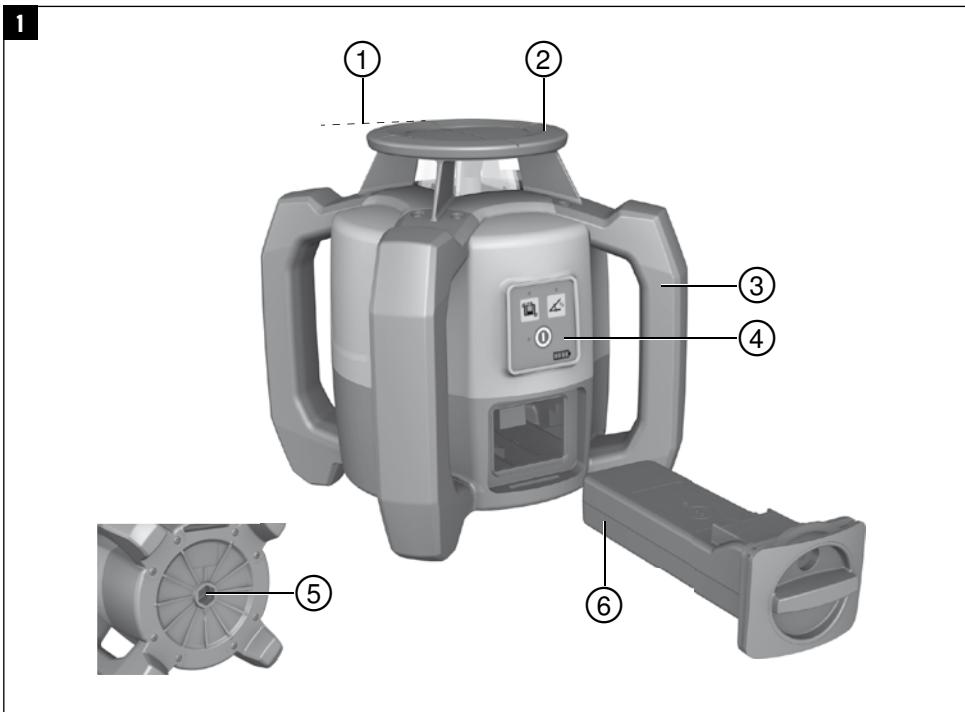
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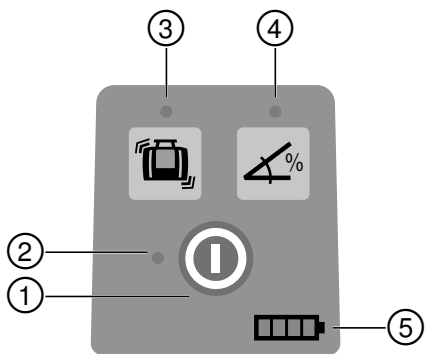
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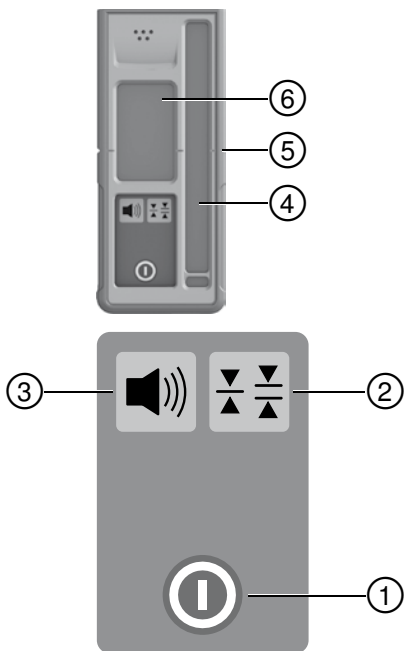
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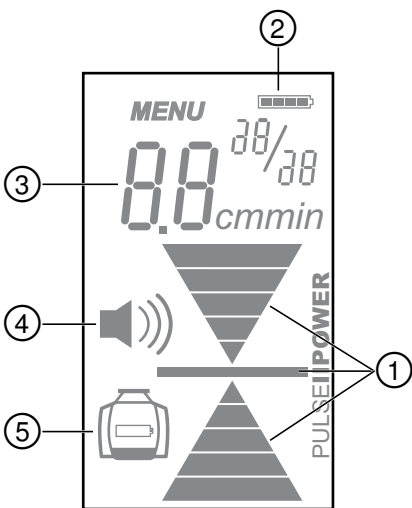
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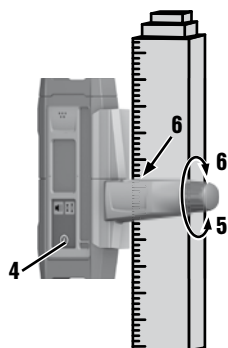
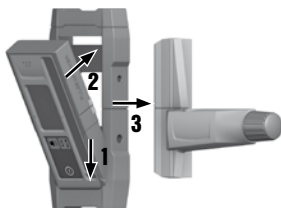


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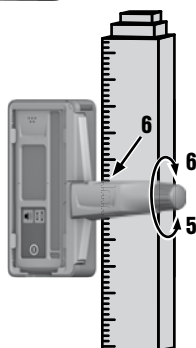
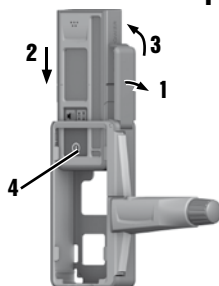


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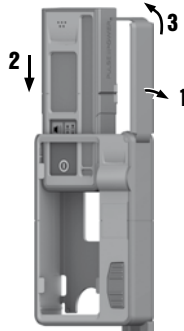
PRA 83



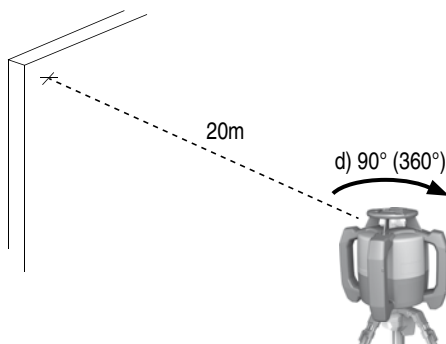
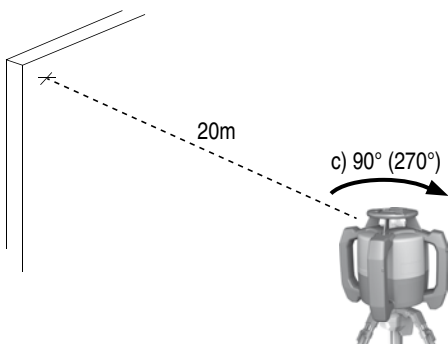
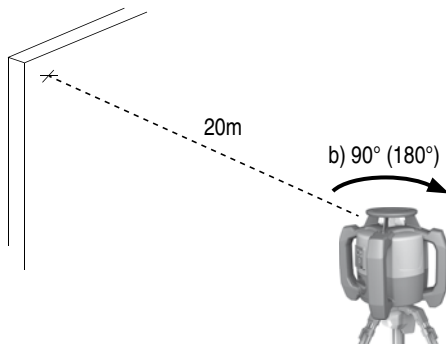
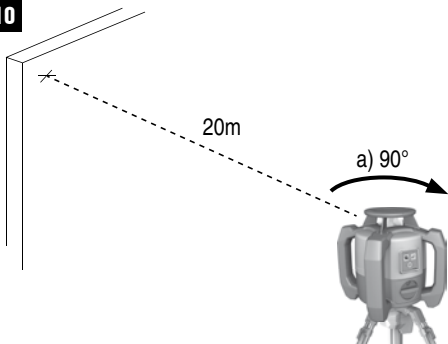
PRA 80



PRA 81



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# ORIGINAL OPERATING INSTRUCTIONS

## PR-2-HS rotating laser

**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" or "the rotating laser" always refers to the Hilti PR 2-HS rotating laser. "Laser receiver" or "receiver" always refers to the PRA 20 (02) laser receiver.

### PR 2-HS rotating laser **1**

- 1 Laser beam (plane of rotation)
- 2 Rotating head
- 3 Grip
- 4 Control panel
- 5 Base plate with  $\frac{5}{8}$ " thread
- 6 PRA 84 Li-ion battery

### Inserting and removing the battery **2**

- 1 PRA 84 Li-ion battery
- 2 Battery compartment
- 3 Catch

### Charging the battery in the tool **3**

- 1 PUA 81 AC adapter
- 2 Charging socket

### Charging the battery after removal from the tool **4**

- 1 PUA 81 AC adapter
- 2 PUA 82 motor vehicle power adapter
- 3 Charging activity LED

### Rotating laser control panel **5**

- 1 On/off button
- 2 Auto-leveling LED
- 3 Shock warning function deactivation button and LED
- 4 Manual inclined plane mode button and LED
- 5 Battery charge status LED

### PRA 20 laser receiver control panel **6**

- 1 On/off button
- 2 Units button
- 3 Volume button
- 4 Receiving window
- 5 Marking notch
- 6 Display

### PRA 20 laser receiver display **7**

- 1 Indicator showing the position of the receiver relative to the height of the laser plane
- 2 Battery status
- 3 Indication of distance from laser plane
- 4 Volume
- 5 Low battery indicator for the rotating laser



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

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 appliance where there is a risk of fire or explosion.

Modification of the tool is not permissible.

## 2.2 Features

The tool makes it possible for a single person to level or align in any plane quickly and with great accuracy.

The tool levels itself automatically after switching on. The laser beam is switched on only when the specified accuracy has been achieved.

LEDs indicate the current operating status.

The tool is powered by a rechargeable Li-ion battery which can be charged while the tool is in operation.

## 2.3 Digital distance measurement display

The laser receiver displays digitally the distance between the laser plane and the marking notch on the laser receiver.

This allows the user to determine the exact position of the receiver relative to the laser plane, with millimeter accuracy, in a single operation.

## 2.4 Horizontal plane

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

## 2.5 Inclined plane (manual alignment in the desired plane of inclination)

The desired inclination can be set with the aid of the PRA 79 slope adapter. For further information on using the slope adapter, please refer to the instruction sheet supplied with the PRA 79.

## 2.6 Shock warning

The shock warning function is activated two minutes after the tool has leveled itself after switching on. If a button is pressed within these two minutes, the two-minute delay begins again. The tool switches to warning mode if it is brought out of level while in operation (due to vibration or an impact); all LEDs begin to blink and the laser switches off (the head stops rotating).

## 2.7 Automatic cut-out

The laser does not switch on and all LEDs blink if the tool is set up outside its self-leveling range ( $\pm 5^\circ$ ) or if movement is blocked mechanically. The tool can be set up on a tripod with a 5/8" thread or stood directly on some other steady surface (free of vibration). When automatic leveling is activated for one or both axes, the built-in servo system ensures that the specified accuracy is maintained. The tool switches itself off when automatic leveling cannot be achieved (tool set up outside its leveling range or physical impediment of the mechanism) or when knocked off level (see "Shock warning" section).

## NOTE

If the correct level cannot be achieved, the laser switches itself off and all LEDs blink.

## 2.8 Items supplied

- 1 PR 2-HS rotating laser
- 1 PRA 20 (02) laser receiver
- 1 PRA 80 or PRA 83 laser receiver holder
- 1 Operating instructions
- 1 PRA 84 Li-ion battery
- 1 PUA 81 AC adapter
- 2 Batteries (size AA cells)
- 2 Manufacturer's certificates
- 1 Hilti toolbox

## 2.9 Operating status indicators

The tool is equipped with the following operating status indicators: auto-leveling LED, battery charge status LED, shock warning deactivation LED and inclined plane mode LED.

## 2.10 LED indicators

|                                |                                   |  |
|--------------------------------|-----------------------------------|--|
| Auto-leveling LED              | The green LED blinks.             | The tool is in the leveling phase.                                       |
|                                | The green LED lights constantly.  | The tool has leveled itself / is operating normally.                     |
| Shock warning deactivation LED | The orange LED lights constantly. | The shock warning function is deactivated.                               |
| Inclined plane mode LED        | The orange LED lights constantly. | Manual inclined plane mode is active.                                    |
| All LEDs                       | All LEDs blink.                   | The tool has been bumped, knocked off level or is exhibiting some error. |

## 2.11 Charge status of the Li-ion battery during operation

| LEDs light constantly | LEDs blink | Charge status 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                 | -          | $10 \% \leq C < 25 \%$ |
| -                     | LED 1      | $C < 10 \%$            |

## 2.12 Charge status of the Li-ion battery during charging while inserted in the tool

| LEDs light constantly | LEDs blink | Charge status C         |
|-----------------------|------------|-------------------------|
| LED 1, 2, 3, 4        | -          | $C = 100\%$             |
| LED 1, 2, 3           | LED 4      | $75 \% \leq C < 100 \%$ |
| LED 1, 2              | LED 3      | $50 \% \leq C < 75 \%$  |
| LED 1                 | LED 2      | $25 \% \leq C < 50 \%$  |
| -                     | LED 1      | $C < 25 \%$             |

## 2.13 Battery charging activity is shown on the battery display while charging the battery outside the tool.

If the red charging activity LED lights constantly, the battery is being charged.

If the red charging activity LED does not light, then either the charging operation is complete or the charger is providing no current.

## 3 Accessories

| Designation            | Short designation |
|------------------------|-------------------|
| Laser receiver         | PRA 20 (02)       |
| Laser receiver holder  | PRA 80            |
| Laser receiver holder  | PRA 83            |
| Height transfer device | PRA 81            |
| Slope adapter          | PRA 79            |
| AC adapter             | PUA 81            |
| Car charging connector | PUA 82            |
| Battery                | PRA 84            |



| Designation                    | Short designation |
|--------------------------------|-------------------|
| Battery                        | PRA 84G           |
| Tripod                         | PUA 20            |
| Crank tripod (elevator tripod) | PUA 30            |
| Crank tripod (elevator tripod) | PA 921            |
| Automatic tripod               | PRA 90            |
| Telescopic staffs              | PUA 50, PUA 55    |

## 4 Technical data

Right of technical changes reserved.

### PR 2-HS

|                                 |   |
|---------------------------------|---|
| Receiving range (diameter)      | With PRA 20 (02) laser receiver: 2...600 m (6.56... 1,968.5 ft)   |
| Accuracy <sup>1</sup>           | At 10 meters: ± 0.5 mm  |
| Laser class                     | Class 2, 620-690 nm; < 1 mW (EN 60825-1:2007 / IEC 60825-1:2007); Class II (CFR 21 § 1040 (FDA)); Maximum power < 4.85 mW at ≥ 300 r.p.m. |
| Speed of rotation               | 300/min ± 10%   |
| Self-leveling range             | ± 5°  |
| Power source                    | 7.2 V / 4.5 Ah Li-ion battery   |
| Battery life                    | Temperature +25°C (+77 °F), Li-ion battery: ≥ 30 h  |
| Operating temperature range     | -20... +50°C (-4...+122 °F)   |
| Storage temperature range (dry) | -25... +60°C (-13...+140 °F)  |
| Protection class                | IP 66 (in accordance with IEC 60529); Not in "charging during operation" mode   |
| Tripod thread                   | 5/8" x 18   |
| Weight (including the PRA 84)   | 2.5 kg (5.51 lb)  |
| Dimensions (L x W x H)          | 200 mm (7.87") x 200 mm (7.87") x 230 mm (9.06")  |
| Drop test height <sup>2</sup>   | 1.5 m (4.92 ft)   |

<sup>1</sup> Influences such as particularly high temperature fluctuations, dampness, shock, dropping, etc. can affect accuracy. Unless stated otherwise, the tool was adjusted or calibrated under standard ambient conditions (MIL-STD-810G).

<sup>2</sup> The drop test was carried out from a tripod, dropping onto flat concrete under standard ambient conditions (MIL-STD-810G).

### PRA 20 (02)

|   |  |
|---|--|
| Detection range (area diameter)                   | With the PR 2-HS (typical): 2...600 m (6.56... 1,968.5 ft) |
| Signal tone generator                             | 3 volume levels plus mute setting                          |
| Liquid-crystal display                            | On both sides  |
| Indicator range, distance from zero               | ± 52 mm  |
| Laser plane display range                         | ± 0.5 mm   |
| Length of the receiving window                    | 120 mm (4.72")   |
| Center indication from top edge of casing         | 75 mm (2.95")  |
| Marking notches                                   | On both sides  |
| Time without detection before automatic power off | 15 min   |

<sup>1</sup> The drop test was carried out using the PRA 83 receiver holder, dropped onto flat concrete under standard ambient conditions (MIL-STD-810G).

|                               |  |
|-------------------------------|--|
| Dimensions (L × W × H)        | 160 mm (6.3") × 67 mm (2.64") × 24 mm (0.94")  |
| Weight (including batteries)  | 0.25 kg (0.55 lb)  |
| Power source                  | 2 AA batteries   |
| Battery life                  | Temperature +20°C (+68 °F): Approx. 50 h (depending on the quality of the alkaline batteries used) |
| Operating temperature range   | -20... +50°C (-4...+122 °F)  |
| Storage temperature range     | -25... +60°C (-13...+140 °F)   |
| Protection class              | IP 66 (in accordance with IEC 60529); Except the battery compartment                               |
| Drop test height <sup>1</sup> | 2 m (6.56 ft)  |

<sup>1</sup> The drop test was carried out using the PRA 83 receiver holder, dropped onto flat concrete under standard ambient conditions (MIL-STD-810G).

#### PRA 84 Li-ion battery

|  |  |
|--|--|
| Rated voltage (normal mode)  | 7.2 V  |
| Maximum voltage (during operation or during charging while in operation) | 13 V   |
| Rated current  | 140 mA   |
| Charging time  | Temperature +32°C (+90 °F): 2 h 10 min (battery 80% charged) |
| Operating temperature range  | -20... +50°C (-4...+122 °F)                                  |
| Storage temperature range (dry)  | -25... +60°C (-13...+140 °F)                                 |
| Charging temperature range (also for charging during operation)          | +0...+40°C (+32...+104 °F)                                   |
| Weight   | 0.3 kg (0.66 lb)   |
| Dimensions (L x W x H)   | 160 mm (6.3") x 45 mm (1.77") x 36 mm (1.42")                |

#### PUA 81 AC adapter

|                                 |  |
|---------------------------------|--|
| AC supply                       | 115...230 V                                    |
| AC frequency                    | 47...63 Hz                                     |
| Rated power                     | 36 W   |
| Rated voltage                   | 12 V   |
| Operating temperature range     | +0...+40°C (+32...+104 °F)                     |
| Storage temperature range (dry) | -25... +60°C (-13...+140 °F)                   |
| Weight                          | 0.23 kg (0.51 lb)                              |
| Dimensions (L x W x H)          | 110 mm (4.33") x 50 mm (1.97") x 32 mm (1.26") |

## 5 Safety instructions

### 5.1 Basic information concerning safety

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.

### 5.2 General safety rules



- a) Do not render safety devices ineffective and do not remove information and warning notices.

- b) **Stay alert, watch what you are doing and use common sense when operating the machine. Don't use the machine when you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating machines may result in serious personal injury.
- c) Keep laser tools out of reach of children.
- d) Failure to follow the correct procedures when opening the tool may cause emission of laser radiation in excess of class 2 or, respectively, class 3. **Have the tool repaired only at a Hilti service center.**
- e) **Do not operate the tool in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Tools and appliances create sparks which may ignite the dust or fumes.
- f) (Statement in accordance with FCC §15.21): Changes or modifications not expressly approved by the manufacturer can void the user's authority to operate the equipment.
- g) Use of setting-up / adjusting devices and equipment or operating procedures other than those specified in these instructions may lead to exposure to hazardous radiation.
- h) **Check the condition of the tool before use. If the tool is found to be damaged, have it repaired at a Hilti service center.**
- i) **Maintain the machine carefully. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the machine's operation. If damaged, have the machine repaired before use.** Poor maintenance is the cause of many accidents.
- j) **The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.**
- k) **Check the tool before using it for important measuring work.**
- l) **Check the accuracy of the measurements several times during use of the tool.**
- m) **When the tool is brought into a warm environment from very cold conditions, or vice-versa, allow it to become acclimatized before use.**
- n) **If mounting on an adapter, check that the tool is screwed on securely.**
- o) **Keep the laser exit aperture clean to avoid measurement errors.**
- p) **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.**
- q) **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.**
- r) **Keep the electrical contacts dry (protect from rain or dampness).**
- s) **Use the mains adapter only for connecting to the mains supply.**
- t) **Check to ensure that the tool and mains adapter do not present an obstacle that could lead to a risk of tripping and personal injury.**
- u) **Ensure that the workplace is well lit.**

- v) **Check the condition of the extension cord and replace it 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 or extension cords present a risk of electric shock.
- w) **Avoid body contact with earthed or grounded surfaces such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- x) **Do not expose the supply cord to heat, oil or sharp edges.**
- y) **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 tools should thus be checked at a Hilti service center at regular intervals, especially if used frequently for working on conductive materials.**
- z) **Avoid touching the contacts.**

### 5.2.1 Battery tool use and care



- a) **Do not expose batteries to high temperatures or fire.** This presents a risk of explosion.
- b) **Do not disassemble, squash or incinerate batteries and do not subject them to temperatures over 75°C.** A risk of fire, explosion or injury through contact with caustic substances may otherwise result.
- c) **Avoid ingress of moisture.** Moisture in the interior of the tool may cause a short circuit and chemical reactions resulting in burns to the skin or fire.
- d) **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.
- e) **Do not use batteries other than those approved for use with the applicable tool or appliance.** Use of other batteries or use of the 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) **When not in use, keep the battery and the charger away from paper clips, coins, keys, nails, screws or other small metal objects that could cause a short circuit at the battery terminals or the charging contacts.** A short circuit at the battery terminals or charging contacts could result in personal injury (burns) or fire.
- h) **Avoid short-circuiting the battery.** Before inserting the battery in the tool, check that the terminals of the battery and the tool are free from foreign objects.

Short-circuiting the battery terminals presents a risk of fire, explosion or contact with caustic substances.

- i) **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).**
- j) **Use only the PUA 81 AC adapter, PUA 82 motor vehicle power adapter or other chargers recommended by the manufacturer to power the tool or charge the battery.** Failure to observe these points may result in damage to the tool. Use of a charger with batteries other than the specific type(s) for which it is designed presents a risk of fire.

### 5.3 Proper organization of the work area

- a) **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.**
- b) **Avoid unfavorable body positions when working from ladders. Make sure you work from a safe stance and stay in balance at all times.**
- c) Readings taken in the vicinity of reflective objects or surfaces, through panes of glass or similar materials may produce incorrect results.
- d) **Ensure that the tool is set up on a steady, level surface (not subject to vibration).**
- e) **Use the tool only within its specified limits.**
- f) **When working in “charging during operation” mode, attach the AC adapter in a secure position, e.g. on a tripod.**
- g) Use of products for applications different from those intended could result in hazardous situations. **Use the product and its accessories etc. in accordance with these instructions and in the manner intended for the particular type of product. Take**

**the working conditions and the work to be performed into account.**

- h) **Use of the telescopic staff in the vicinity of overhead high voltage cables is not permissible.**

### 5.3.1 Electromagnetic compatibility

#### NOTE

Only for Korea: This device is suitable for the electromagnetic radiation encountered in residential environments (Class B). It is intended mainly for use in residential environments but may also be used in other environments.

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).

### 5.3.2 Laser classification for Laser Class 2/Class II tools

Depending on the version purchased, the tool complies with Laser Class 2 in accordance with IEC825-1:2007/EN60825-1:2007 and Class II in accordance with CFR 21 § 1040 (FDA). This tool may be used without need for further protective measures. The eyelid closure reflex protects the eyes when a person looks into the beam unintentionally for a brief moment. This eyelid closure reflex, however, may be negatively affected by medicines, alcohol or drugs. Nevertheless, as with the sun, one should not look directly into sources of bright light. Do not direct the laser beam toward persons.

## 6 Before use

### NOTE

The tool may be powered only by a Hilti PRA 84 or PRA 84G battery.

### 6.1 Fitting the battery 2

#### CAUTION

**Before inserting the battery in the tool, check to ensure that the battery terminals and the contacts in the tool are free from foreign objects.**

1. Push the battery into the tool.
2. Turn the catch in a clockwise direction until the “locked” symbol appears.

### 6.2 Removing the battery 2

1. Turn the catch in a counter-clockwise direction until the “unlocked” symbol appears.
2. Pull the battery out of the tool.

### 6.3 Charging the battery



#### DANGER

**Use only the Hilti batteries and Hilti AC adapters listed under “Accessories”.** Use of tools or AC adapters which show visible signs of damage is not permissible.

### 6.3.1 Charging a new battery for the first time

Charge the battery fully before using it for the first time.

#### NOTE

Make sure the system to be charged is standing securely.

### 6.3.2 Recharging a battery

1. Check that the outer surfaces of the battery are clean and dry.
2. Insert the battery in the tool.

**NOTE** Li-ion batteries are ready for use at any time, even when only partly charged. Charging progress is indicated by the LEDs when the tool is switched on.

### 6.4 Options for charging the battery



#### **DANGER**

**The PUA 81 AC adapter is for indoor use only. Avoid ingress of moisture.**

#### **NOTE**

Make sure that the recommended temperature range is observed when charging (0 to 40°C).

#### 6.4.1 Charging the battery in the tool **3**

1. Insert the battery in the battery compartment (see 6.1).
2. Rotate the socket cover until the charging socket on the battery becomes visible.
3. Plug the cord from the AC adapter or motor vehicle power adapter into the battery. The battery will be charged.
4. Switch the tool on in order to display the charging status while charging is in progress.

#### 6.4.2 Charging the battery outside the tool **4**

1. Remove the battery (see 6.2).
2. Connect the cord from the AC adapter or the motor vehicle power adapter to the battery. The red LED on the battery indicates charging activity.

#### 6.4.3 Charging the battery while the tool is in operation **3**

#### **DANGER**

Operation in “charging during operation” mode is not permissible for outdoor use or in damp surroundings.

### **CAUTION**

**Avoid ingress of moisture.** Moisture in the interior of the tool may cause a short circuit and chemical reactions resulting in burns to the skin or fire.

1. Rotate the socket cover until the charging socket on the battery becomes visible.
2. Plug the cord from the AC adapter into the battery. The tool continues to operate while charging and battery charging status is indicated by the LEDs on the tool.

### 6.5 Battery use and care

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

### 6.6 Switching the tool on

Press the on/off button.

#### **NOTE**

After switching on, the tool begins to level itself automatically. The laser switches on when leveling is complete.

### 6.7 LED indicators

Please refer to section 2 “Description”.

### 6.8 Inserting the batteries in the laser receiver **3**

#### **DANGER**

**Do not use damaged batteries.**

#### **DANGER**

Do not mix old and new batteries. Do not mix batteries of different makes or types.

#### **NOTE**

The laser receiver may be powered only by batteries manufactured in accordance with the applicable international standards.

1. Open the laser receiver battery compartment.
2. Insert the batteries in the laser receiver. **NOTE** Check to ensure correct polarity when inserting the batteries.
3. Close the battery compartment cover.

## 7 Operation



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### 7.1 Checking the tool

Check the accuracy of the tool before using it for important tasks, especially if it has been dropped or subjected to unusual influences or impacts etc. (see 8.6).

### 7.2 Switching the tool on

Press the on/off button.

#### NOTE

After switching on, the tool begins to level itself automatically.

### 7.3 Working with the laser receiver

The laser receiver can be used at distances (radiuses) of up to 300 m (1,000 ft). The laser beam is indicated by visual and audible signals.

#### 7.3.1 Working with the laser receiver as a handheld unit

1. Press the on/off button.
2. Hold the laser receiver with the receiving window directly in the plane of the rotating laser beam.

#### 7.3.2 Working with the laser receiver in the PRA 80 receiver holder

1. Open the catch on the PRA 80.
2. Place the receiver in the PRA 80 receiver holder.
3. Close the catch on the PRA 80.
4. Switch the receiver on by pressing the on/off button.
5. Turn the rotating grip to the open position.
6. Secure the PRA 80 receiver holder on the telescopic staff or leveling staff by tightening the clamping knob.
7. Hold the receiver with the receiving window in the plane of the rotating laser beam.

#### 7.3.3 Working with the laser receiver in the PRA 83 receiver holder

1. Push the receiver into the rubber sleeve of the PRA 83 at an angle until it fully encloses the receiver. Take care to ensure that the receiving window and the buttons are facing the front.
2. Fit the receiver, complete with the rubber sleeve, onto the grip section. The cover and grip section are joined together by the magnetic holder.
3. Switch the receiver on by pressing the on/off button.
4. Turn the rotating grip to the open position.
5. Secure the PRA 83 receiver holder on the telescopic staff or leveling staff by tightening the clamping knob.
6. Hold the receiver with the receiving window in the plane of the rotating laser beam.

#### 7.3.4 Working with the PRA 81 height transfer device

1. Open the catch on the PRA 81.
2. Insert the laser receiver in the PRA 81 height transfer device.
3. Close the catch on the PRA 81.
4. Switch the laser receiver on by pressing the on/off button.
5. Hold the laser receiver with the receiving window directly in the plane of the rotating laser beam.
6. Position the laser receiver so that the distance display shows "0".
7. Use the measuring tape to measure the desired distance.

#### 7.3.5 Setting the measuring unit

The "Units" button can be used to set the desired accuracy of the digital display (mm/cm/off).

#### 7.3.6 Volume adjustment

When the receiver is switched on, the volume is set to "normal". The volume can be adjusted by pressing the "Volume" button. One of four settings can be selected: "Low", "Normal", "High" or "Off".

#### 7.3.7 Menu options

1. Press and hold the on/off button for two seconds when switching the laser receiver on. The menu then appears in the display.
2. Use the "Measuring units" button to select metric or imperial measuring units.
3. Use the "Volume" button to assign the more rapid signal tone to the upper or lower area of the receiving window.
4. To save the settings, switch the laser receiver off.  
**NOTE** Each setting that has been made becomes effective the next time the tool is switched on.

#### 7.4 Deactivating the shock warning function

1. Switch the tool on (see 7.2).
2. Press the "Deactivate shock warning" button. The shock warning deactivation LED lights constantly, indicating that the function has been deactivated.
3. To return to standard operating mode, switch the tool off and then switch it back on again.

#### 7.5 Working in the horizontal plane

1. Set up the tool in a suitable position for the application, e.g. on a tripod. Alternatively, the rotating laser may be mounted on a wall bracket. The angle of inclination of the surface on which it stands should not exceed  $\pm 5^\circ$ .

2. Press the on/off button.  
The auto-leveling LED blinks green.  
The laser switches on, the beam begins to rotate and the "auto leveling" LED lights as soon as the tool has leveled itself.

### 7.6 Working with slopes (manual settings)

#### NOTE

Check that the slope adapter is fitted correctly between the tripod and the tool (please refer to the operating instructions for the PRA 79).

#### 7.6.1 Setting up

1. Set up the PRA 79 slope adapter in a suitable position for the application, e.g. on a tripod.
2. Position the tripod either at the upper edge or lower edge of the inclined plane.

3. Mount the rotating laser on the slope adapter and bring it into alignment with the inclined plane, i.e. parallel to the slope. The control panel of the PR 2-HVS should face away from the direction of inclination.
4. Make sure that the slope adapter is in the zero position (0°).

#### 7.6.2 Switching on

1. Switch the tool on (see 7.2).
2. Press the "Inclined plane manual mode" button.  
The "Inclined plane mode" LED then lights on the control panel of the rotating laser.  
The tool then begins automatic self-leveling. The laser switches on and begins to rotate as soon as this is complete.
3. Now set the slope adapter to the desired angle of inclination.
4. To return to standard operating mode, switch the tool off and then switch it back on again.

## 8 Care and maintenance

### 8.1 Cleaning and drying

1. Blow dust off exit windows.
2. Do not touch the glass with the fingers.
3. Use only a clean, soft cloth for cleaning. If necessary, moisten the cloth slightly with pure alcohol or a little water.

**NOTE** Abrasive cleaning materials may scratch the glass and impair the accuracy of the laser tool.

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

4. Dry the equipment, observing the maximum temperatures given in the technical data.

**NOTE** Especially in summer and winter, take care that the given maximum and minimum temperatures are not exceeded, e.g. when the equipment is stored in a motor vehicle.

### 8.2 Care of the Li-ion battery

#### NOTE

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

#### NOTE

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

#### NOTE

Charging can be started at any time with no negative effect on battery life. There is no memory effect (as with NiCd or NiMH batteries).

#### NOTE

For best results, batteries should be stored fully charged in a cool dry place. Storing the battery in places subject to high ambient temperatures (e.g. at a window) has an

adverse effect on battery life and increases the rate of self-discharge.

#### NOTE

Batteries lose capacity due to aging and overstraining. They can then no longer be fully charged. You may continue to work with a battery that shows signs of aging, but the battery should be replaced in good time.

1. Avoid ingress of moisture.
2. Charge the battery fully before using it for the first time.
3. Charge the battery as soon as its performance begins to drop significantly.  
**NOTE** Recharging in good time will increase the service life of the battery.  
**NOTE** If use of the tool continues, further battery discharge will be stopped automatically before the battery cells suffer damage.
4. Charge the battery with the Hilti charger approved for use with Li-ion batteries.

### 8.3 Storage

1. Remove the appliance from its case if it has become wet. Dry and clean the tool, its transport container and accessories (while observing the permissible temperature range). Repack the equipment only once it is completely dry.
2. Check the accuracy of the equipment before it is used after a long period of storage or transportation.
3. Remove rechargeable and non-rechargeable batteries from the tool or the laser receiver before storing the units for long periods. The tool or laser receiver may suffer damage caused by leakage from rechargeable or non-rechargeable batteries.

#### 8.4 Transport

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

#### CAUTION

Remove the batteries from the tool and receiver before transport or shipping.

#### 8.5 Calibration by the 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. We recommend that the tool is calibrated at least once a year.

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.

In the event of deviation from the manufacturer's specification, the used tool will be readjusted. 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.

The Hilti representative in your local region will be pleased to provide further information.

#### 8.6 Checking accuracy

#### NOTE

In order to ensure compliance with the technical specifications, the tool should be checked regularly (at least before each major / relevant job).

#### NOTE

After falling and suffering an impact it can be presumed that the tool will continue to operate faultlessly, with the accuracy it achieved prior to the impact, when the following conditions are met:

The height of the fall did not exceed the height given in the technical data.

The tool suffered no obvious mechanical damage from the impact (e.g. breakage of the pentaprism).

The tool projects a rotating laser beam when in operation.

The tool operated faultlessly before the impact.

#### 8.6.1 Checking the main and transverse horizontal axes

1. Set up the tripod approx. 20 m from a wall and level the tripod head with a spirit level.
2. Mount the tool on the tripod and use the aiming notch to aim the tool at the wall.
3. Use the laser receiver to catch the laser beam and mark a point (point 1) on the wall.
4. Pivot the tool clockwise through 90° about its own axis. In doing so, ensure that the height of the tool does not change.
5. Use the laser receiver to catch the laser beam and mark a second point (point 2) on the wall.
6. Repeat steps 4 and 5 twice and mark points 3 and 4 on the wall with the aid of the laser receiver.

When this procedure is carried out carefully, the vertical distance between the two marked points 1 and 3 (main axis) or, respectively, points 2 and 4 (transverse axis) should be less than 2 mm (at 20 m). If the deviation is greater than this, the tool should be returned 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.



Dispose of the batteries in accordance with national regulations. Please help us to protect the environment.



## 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.

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## 11 FCC statement (applicable in US) / IC statement (applicable in Canada)

This device complies with part 15 of the FCC Rules and RSS-210 of the IC. Operation is subject to the following two conditions:

This device should cause no cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

### NOTE

Changes or modifications not expressly approved by Hilti may restrict the user's authorization to operate the equipment.



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