

HILTI

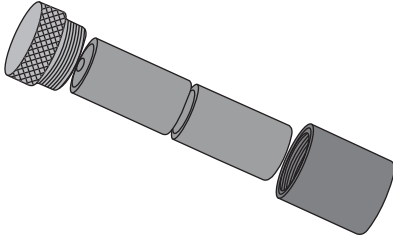
PL MG-IS

Operating instructions

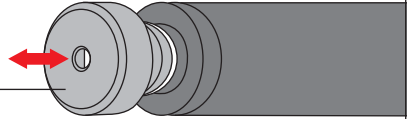
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1



2



Dummy Front Cap
Line Generating Front Cap
Cross Generating Front Cap

3



ORIGINAL OPERATING INSTRUCTIONS

PL MG-IS Line 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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Refer to the pictogram

1 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 PL MG-IS Line Laser.

- 1 Insert the batteries
- 2 Change of the Front Cap (lens)
- 3 Switch on/off

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1. General information

1.1 Safety notices and their meaning

ANGER

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

WARNING

Draws attention to a potentially dangerous situation that could lead to serious 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.

1.2 Explanation of the pictograms and other information

Warning signs



General warning



Warning: explosive substances



Warning: electricity



Warning: caustic substances

Symbols



Read the operating instructions before use



Disposal of power tools or appliances and batteries together with household waste is not permissible.



Return waste material for recycling.



Laser class 3A
EN60825-1:2008
SAEx MS/09-098X
EX IB 1/HC-T6



Do not look into the beam

On the tool



Do not stare into the beam.

2. Description

The water resistant PL MG-IS Line Laser features a 532 nm/Class IIIa, max. 5 mW, Ultra bright, highly visible green beam with extended range. It is durable and impact resistant. Use 2 x D Cell Batteries. Hilti recommend the use of Duracell D-Cell 1.5 V Alkaline batteries in this product.

The PL MG-IS Line Laser is a portable device, with a 304 stainless steel tubular outer housing and a nylon inner sleeve. The housing has an overall length of 400 mm and a diameter of 45 mm. The rear part of the pvc inner sleeve serves as the battery compartment which houses two size D-Duracell 1.5 V Alkaline batteries. A brass screw-on cover at the rear serves simultaneously as battery compartment cover, positive connection for the batteries and on/off switch. The laser is mounted at the other (front) end of the housing. An O-ring at the front-end ensures that no ingress will enter the unit via the laser aperture.

2.1 Compliance

The unit as described above and examined in the Test Report NO: SAEx 09-098 is certified "Explosion Protected" EX Ib I/IIC T6, and is suitable for use in hazardous locations as stated below, as determined during inspections conducted in accordance with the relevant requirements of SANS Standards:

SANS/IEC 60079: „Electrical apparatus for explosive gas atmospheres“,

- Part 0: 2005, "General requirements" and

- Part 11: 2007, "Equipment Protected by Intrinsic Safety 'I'".

Locations Zone 1 and 2 Mining and Surface
Hazardous Frequency Intermittent as could occur under normal operations

Environment Group IIC Propane to Hydrogen (Excluding acetylene)

Limiting Temperature T6

Ambient Temperature -20°C to 40°C

The use of the apparatus in hazardous locations is subject to the following provision, which shall be adhered to:

- i) SANS 10086 requirements;
- ii) Any relevant requirements of the MHS Act or the OHS Act;
- iii) Codes of Practice enforced in terms of Regulations 21.17/2 of the Minerals Act, by the Chief Inspector of Mines;
- iv) Any restrictions and conditions enforced by the Chief Inspector of Mines, Principal Inspector (Group I equipment) or Chief Inspector of Factories (Group II equipment).

2.2 Items supplied with the cardboard box version

- 1 Line laser
- 1 Lens 45 mm assy (Dummy Front Cap, Line Generating Front Cap, Cross Generating Front Cap)
- 1 Soft pouch
- 2 Batteries
- 1 Operating instructions

3. Accessories

Brass Screw cap M36 x 1,

Lens 45 mm assy (Dummy Front Cap, Line Generating Front Cap, Cross Generating Front Cap)

O-ring 28 x 4 (2 pcs). + 24 x 3 mm (2 pcs.)

4. Technical data

Wavelength	532 nm
Optical Output Power	max. 5 mW
Stability	+/-5%
Transverse Mode	TEM ₀₀
Laser Class:	IIIa
Laser Operation	Continuous
Laser Beam diam. at source	1.0 mm
Laser Beam Divergence	<1 milliradians

Operating Voltage	2.8 to 3.5 VDC
Operating Current	<280 mA
Electrical Control	APC (automatic power control)
Electrical Connections	+Red; -Black
Module Dimensions	12 mm (diam.) x 66 mm (length)
Weight	2150 g (incl. batteries)
Cable Length	100 mm
Operating Temperatures	-10 to + 40°C
Storage Temperatures	-20 to + 60°C

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 General safety rules

- a) Check the accuracy of the tool before using it to take measurements.
- b) The tool and its ancillary equipment may present hazards when used incorrectly by untrained personnel or when used not as directed.
- c) To avoid the risk of injury, use only genuine Hilti accessories and additional equipment.
- d) Modification of the tool is not permissible.
- e) Observe the information printed in the operating instructions concerning operation, care and maintenance.
- f) Do not render safety devices ineffective and do not remove information and warning notices.
- g) Keep laser tools out of reach of children.
- 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) The user must check the accuracy of the tool after it has been dropped or subjected to other mechanical stresses.
- j) When the tool is brought into a warm environment from very cold conditions, or vice-versa, allow it to become acclimatized before use.
- k) Keep the laser exit aperture clean to avoid measurement errors.
- l) Although the tool is designed for the tough conditions of underground use, as with other optical and electronic instruments (e.g. binoculars, spectacles, cameras) it should be treated with care.
- m) Although the tool is protected to prevent entry of dampness, it should be wiped dry each time before being put away after use.
- n) Check the accuracy of the measurements several times during use of the tool.

5.2 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) Measurements taken through panes of glass or other objects may be inaccurate.
- 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) If several laser tools are used in the same working area, care must be taken to avoid confusing the beams.
- g) Magnetic fields may affect the accuracy of the tool. It must thus be kept away from magnetic objects. The tool is not affected by the Hilti universal adapter.
- h) When working with the receiver, it must be held exactly at right angles to the laser beam.
- i) Do not use the tool in the proximity of medical instruments.

5.3 Laser classification for laser class 3A / class IIIa appliances

Depending on the version purchased, the tool complies with Laser Class 3A. 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.

5.4 Electrical



- a) Insulate or remove the batteries before shipping the tool.
- b) 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.

- c) **Keep the batteries out of reach of children.**
- d) **Do not allow the batteries to overheat and do not expose them to fire.** The batteries may explode or release toxic substances.
- e) **Do not charge the batteries.**
- f) **Do not solder the batteries into the tool.**
- g) **Do not discharge the batteries by short circuiting as this may cause them to overheat and present a risk of personal injury (burns).**
- h) **Do not attempt to open the batteries and do not subject them to excessive mechanical stress.**
- i) **Do not use damaged batteries.**

- j) **Do not mix old and new batteries. Do not mix batteries of different makes or types.**

5.5 Liquids

Liquid may leak from the batteries if they are used incorrectly. **Avoid contact. If contact accidentally occurs, rinse 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 leaking from the battery may cause irritation or burns.

6. Before use

6.1 Inserting the batteries 1

DANGER

Use only new batteries.

1. Open the battery screw cap.
2. Remove the batteries from the packaging and insert them in the tool.

NOTE Only D-Cell Duracell D-Cell 1.5 V Alkaline batteries recommended by Hilti may be used to power the tool.

3. Check that the battery terminals are positioned correctly. **1**
4. Close the battery compartment. Check that the catch engages properly.

7. Operation

7.1 Switching the laser beams on 3

Screw the battery screw cap tight so that the contact of the batteries is given.

7.2 Examples of applications

7.2.1 Flat-end development

- Grade lines: Accurate profiling of tunnels allowing excess to reef bodies as well as exact holing into other tunnels / shafts
- Direction lines: Laser accessories allow drill rig operator to align both grade and direction simultaneously (x)

7.2.2 In-Slope development

- Direction lines in ASG/ASD
- Direction lines in raises & winzes

7.2.3 In-Slope support

- Alignment of permanent support
- Alignment of temporary support
- Alignment of roof bolts

7.2.4 Continuos Miner Alignment

- Alignment of drill rigs for correct profiling

8. Care and maintenance

8.1 Cleaning and drying

1. Blow dust off the glass.
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** Do not use any other liquids as these may damage the plastic components.
4. Observe the temperature limits when storing your equipment. This is particularly important in winter / summer if the equipment is kept inside a motor vehicle (-20°C to +60°C / -4°F to 140°F).

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 60°C / 140°F). Repack the equipment only once it has dried completely and then store it in a dry place.

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.

DANGER

Always remove the batteries before shipping the tool.

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 or appliances for recycling. Ask Hilti Customer Service or your Hilti representative for further information.



For EC countries only

Disposal of electric 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, electric tools 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.

11. EC declaration of conformity

Designation:	Line Laser
Type:	PL MG-IS Line Laser
Year of design:	2010

We declare, on our sole responsibility, that this product complies with the following directives and standards: EN 50081-1, EN 61000-6-2, 89/336 EEC.

Hilti Corporation

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