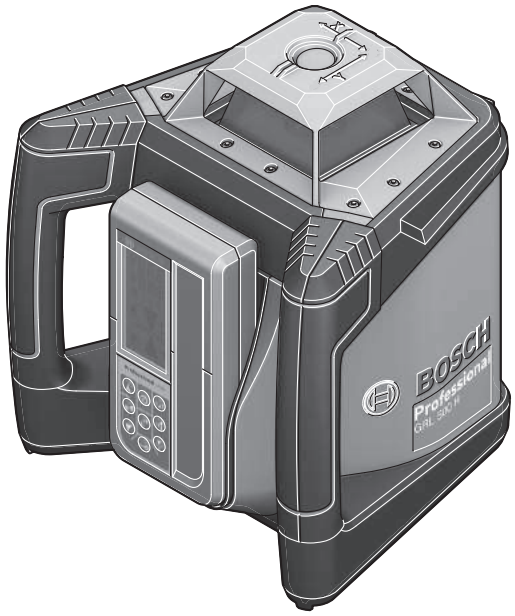
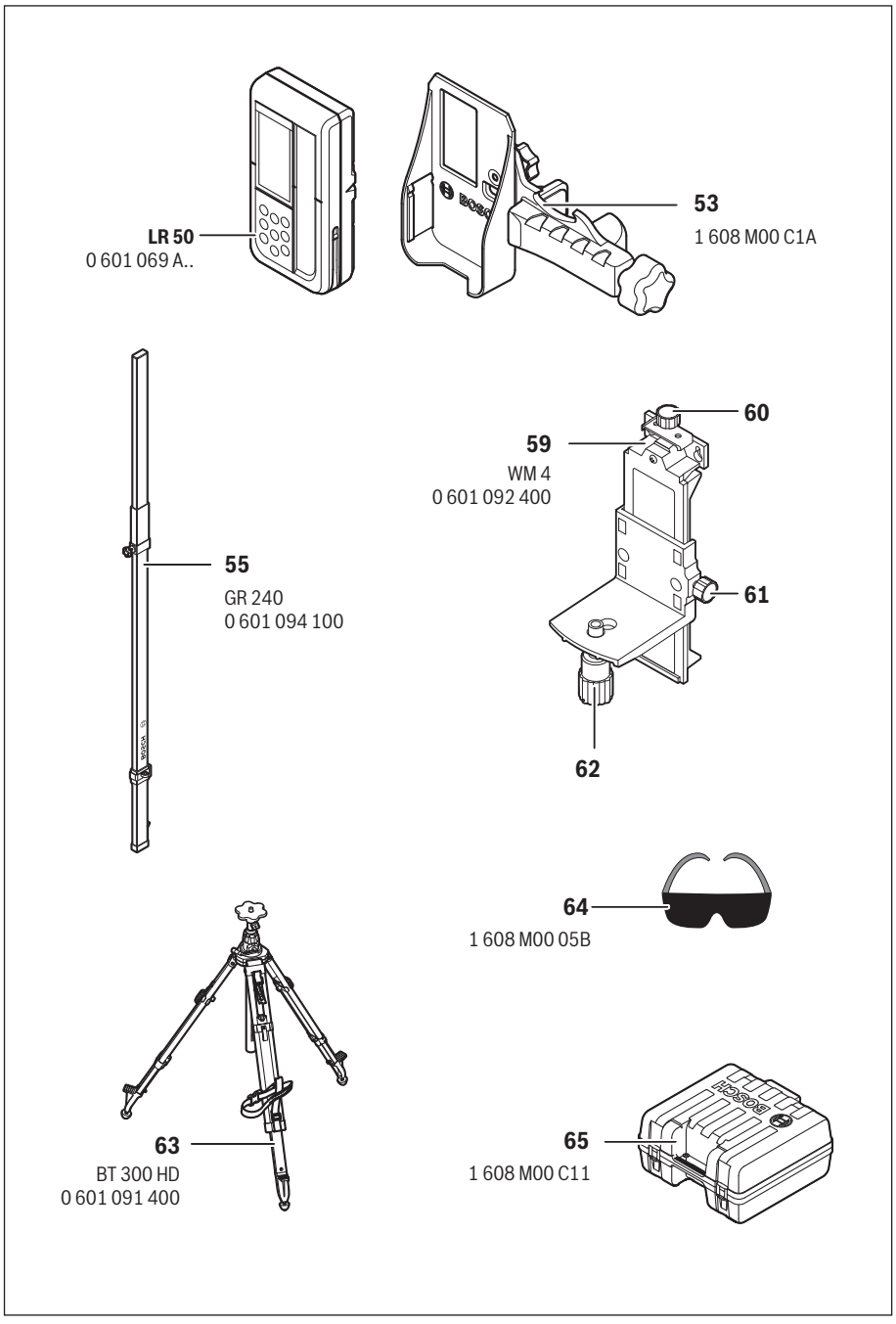


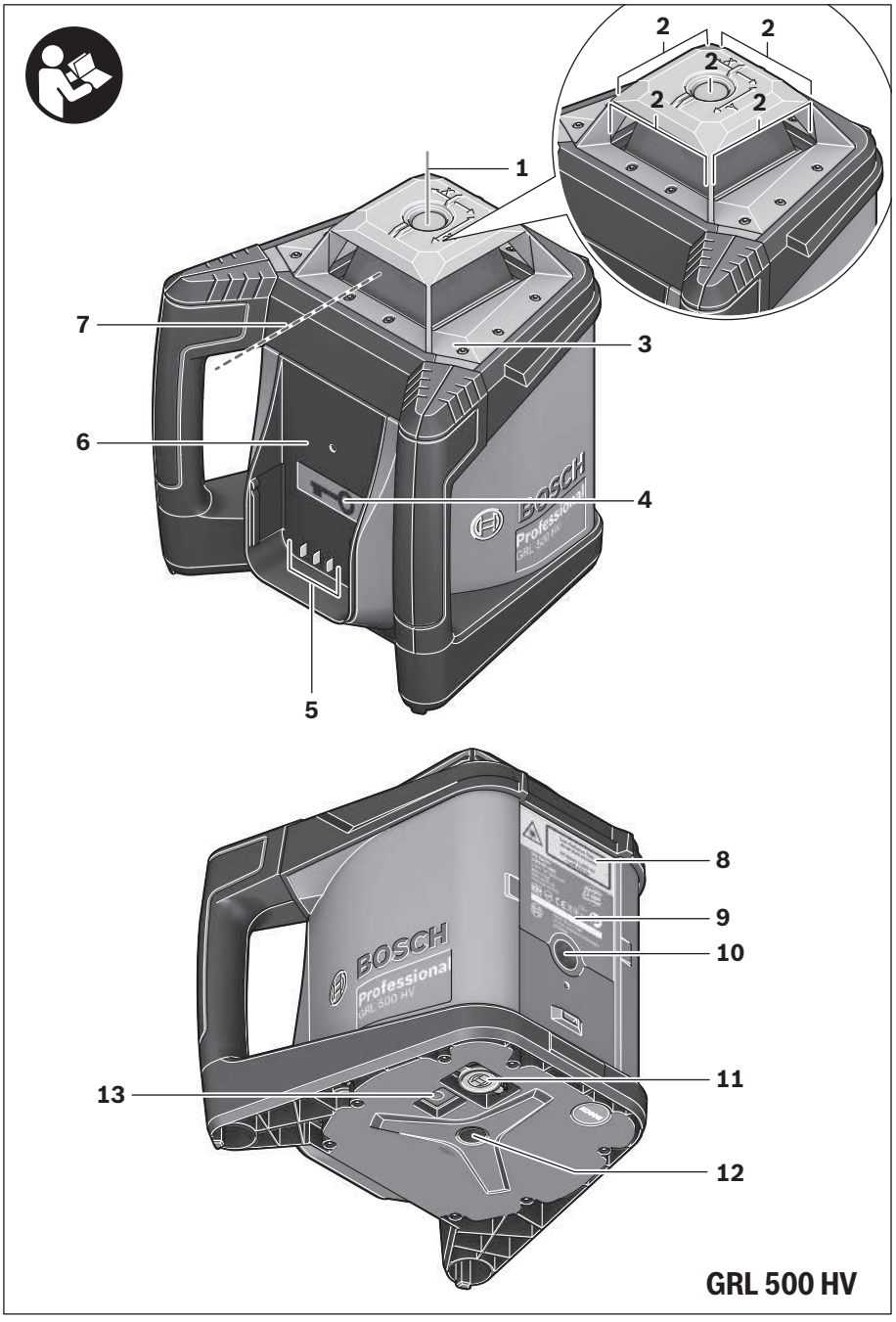
GRL Professional

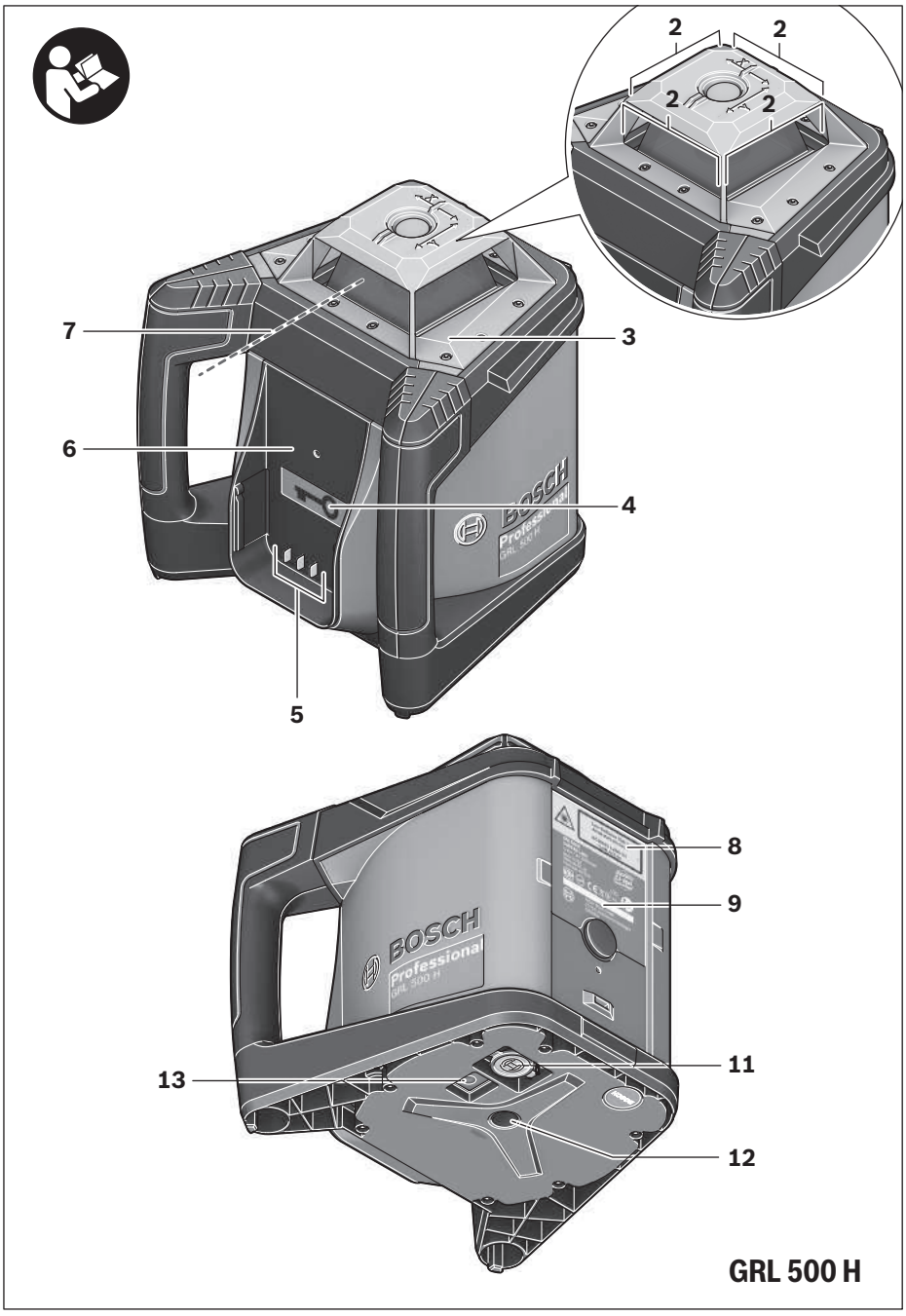
500 H | 500 HV

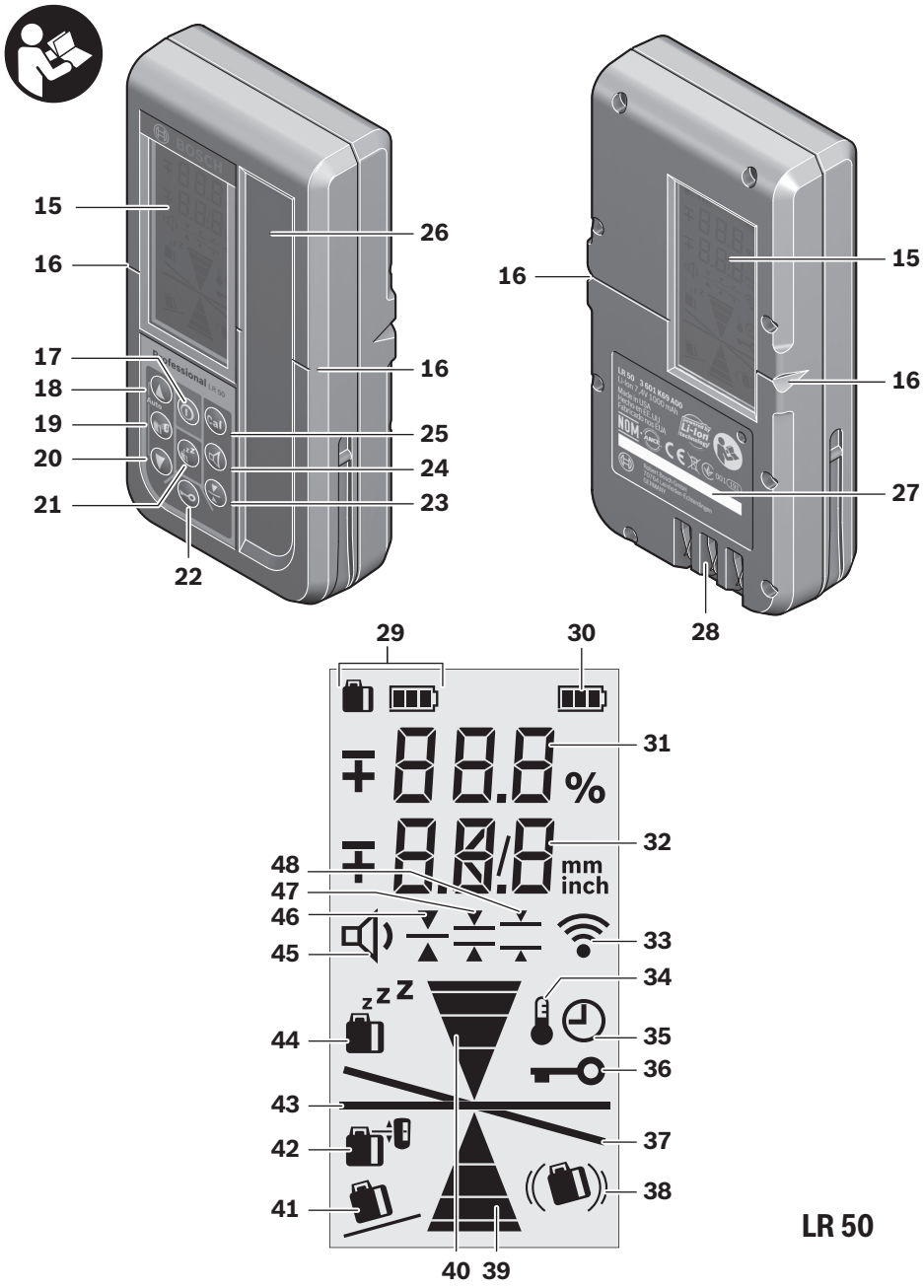
LR 50 Professional

BOSCH

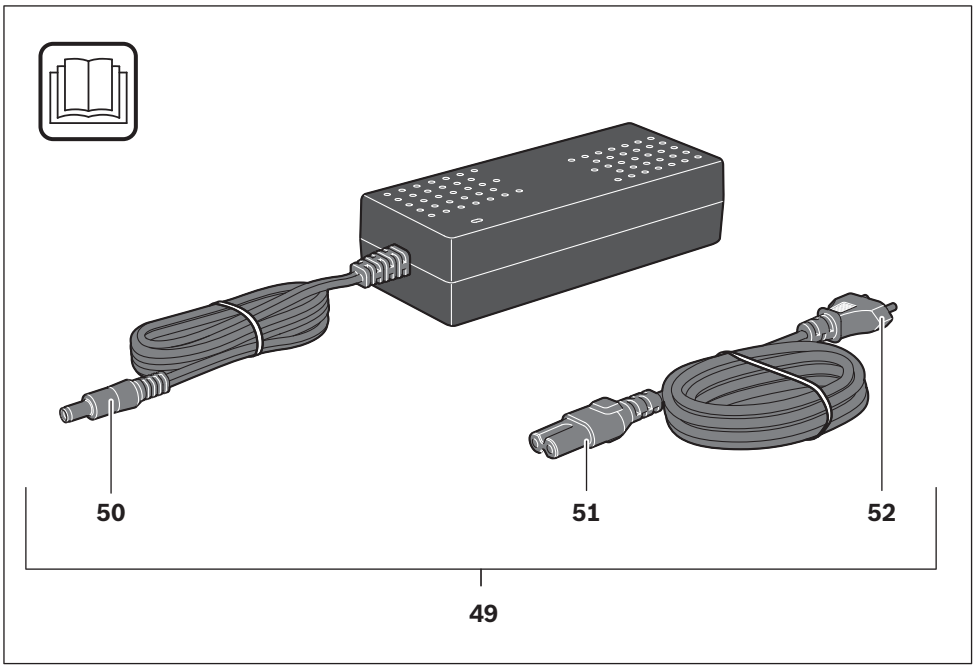


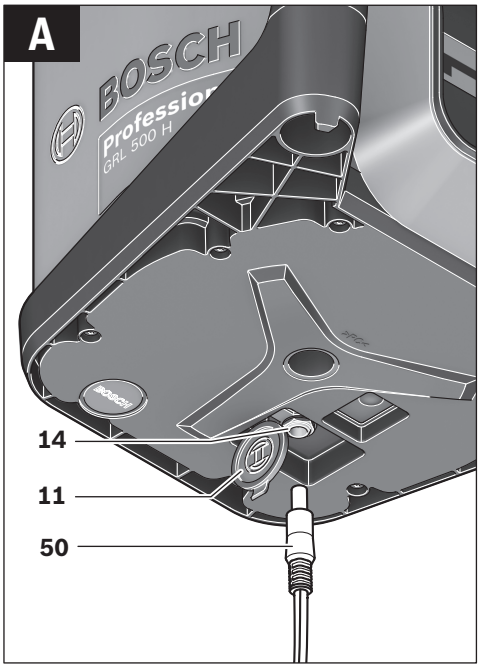


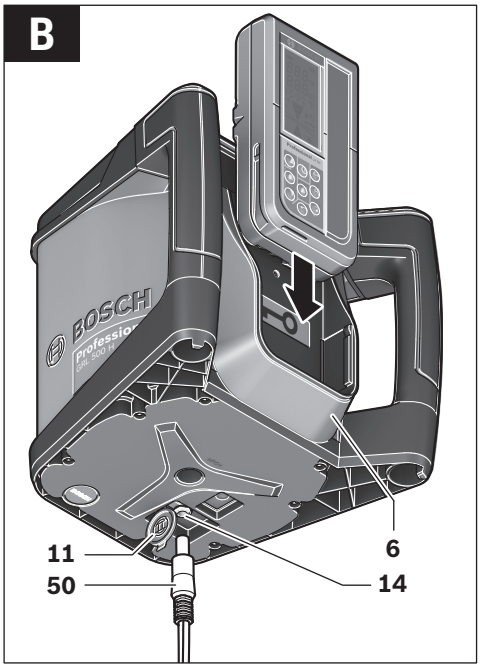


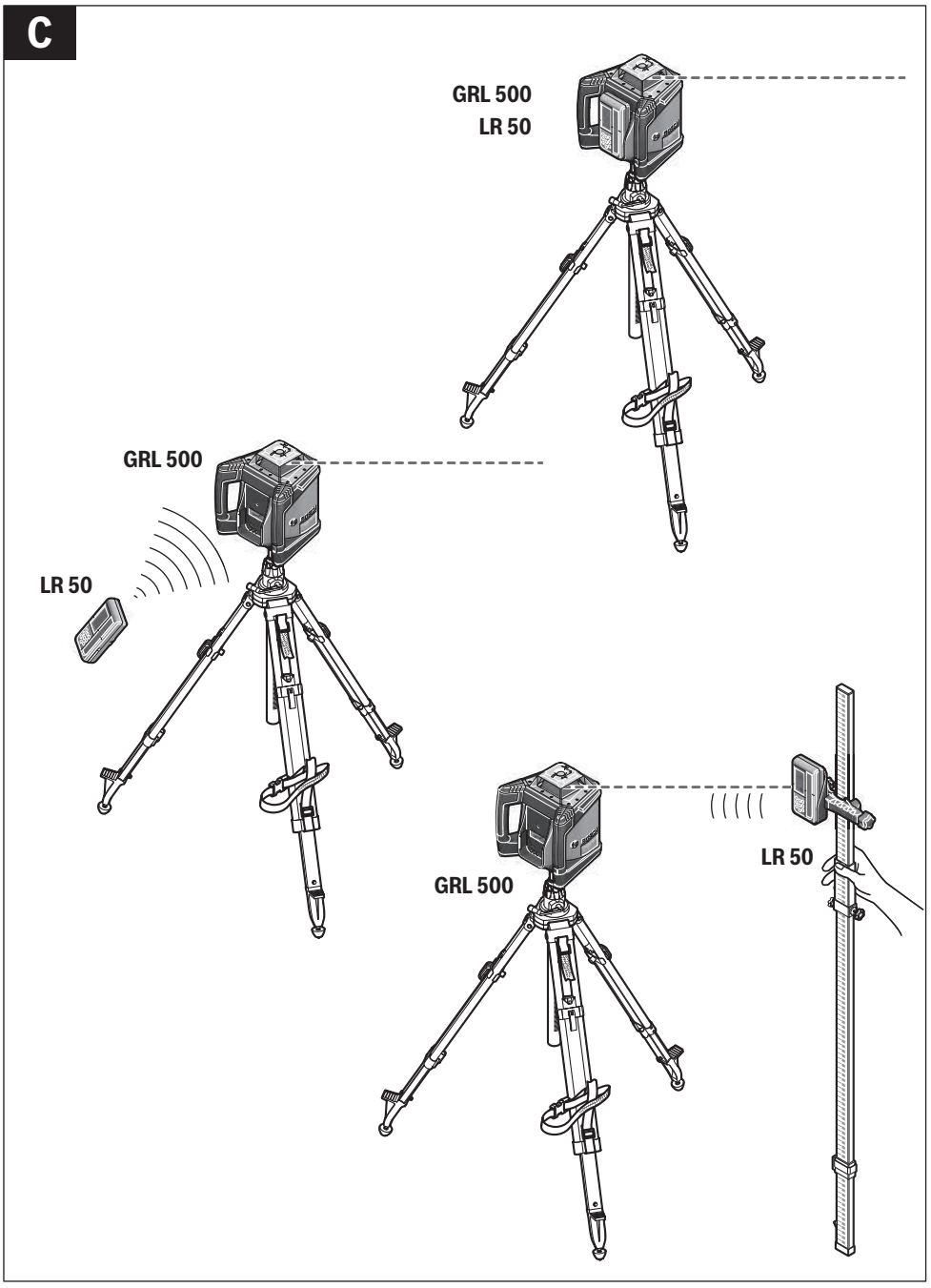


LR 50

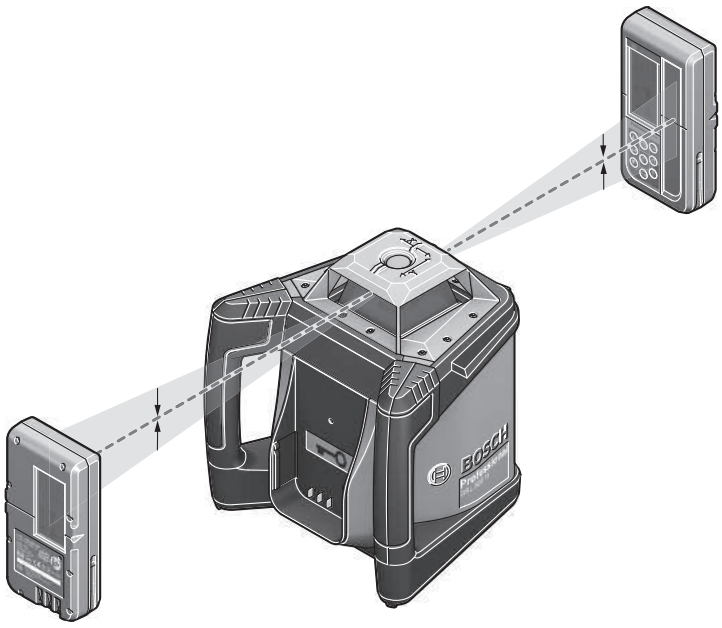








D



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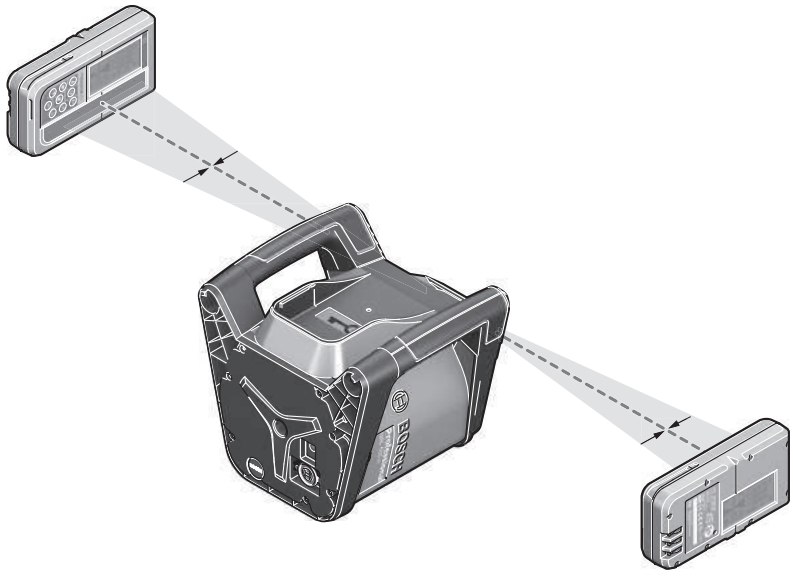

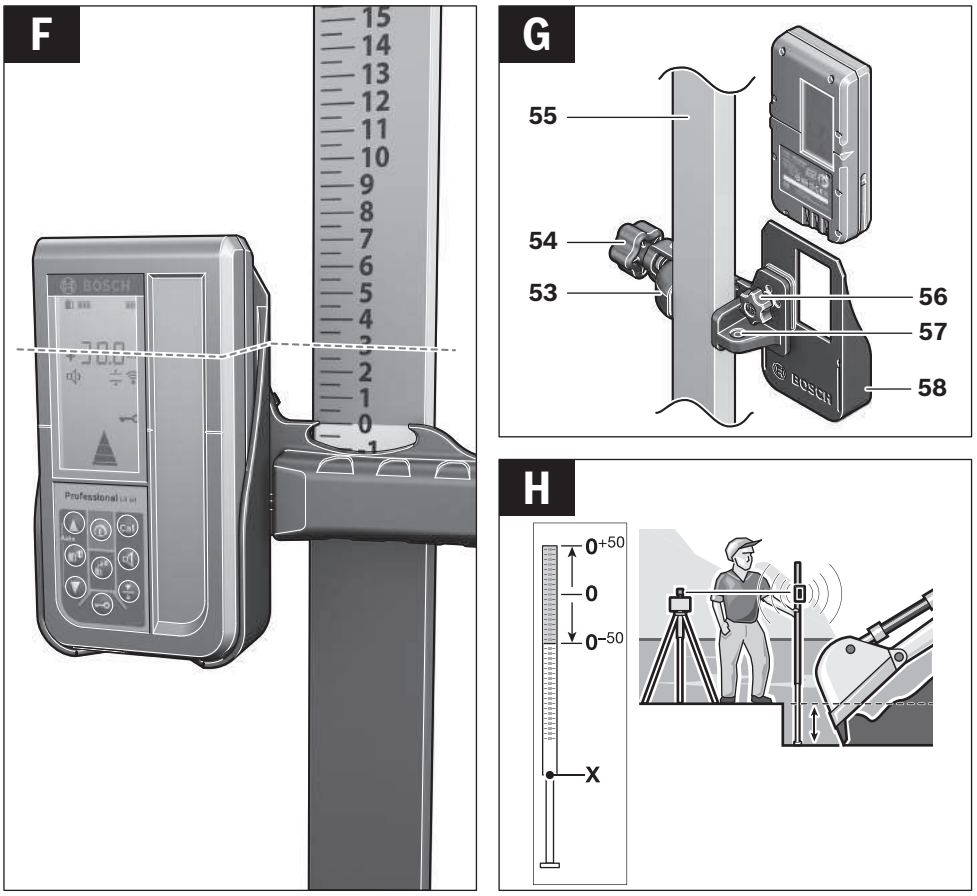

English

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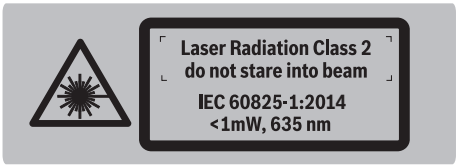
Safety Notes

Rotational Laser Level

All instructions must be read and observed in order to work safely with the measuring tool. The integrated protections in the measuring tool may be compromised if the measuring tool is not used in accordance with the instructions provided. Never make warning signs on the measuring tool unrecognisable. STORE THESE INSTRUCTIONS IN A SAFE PLACE AND INCLUDE THEM WITH THE MEASURING TOOL WHEN GIVING IT TO A THIRD PARTY.

- **Caution – The use of other operating or adjusting equipment or the application of other processing methods than those mentioned here can lead to dangerous radiation exposure.**
- **The measuring tool is provided with a warning label (marked with number 8 in the representation of the measuring tool on the graphics page).**



- **If the text of the warning label is not in your national language, stick the provided warning label in your national language over it before operating for the first time.**

Do not direct the laser beam at persons or animals and do not stare into the direct or reflected laser beam yourself, not even from a distance. You could blind somebody, cause accidents or damage your eyes.

- **If laser radiation strikes your eye, you must deliberately close your eyes and immediately turn your head away from the beam.**
- **Do not make any modifications to the laser equipment.**
- **Do not use the laser viewing glasses as safety goggles.** The laser viewing glasses are used for improved visualisation of the laser beam, but they do not protect against laser radiation.
- **Do not use the laser viewing glasses as sun glasses or in traffic.** The laser viewing glasses do not afford complete UV protection and reduce colour perception.
- **Have the measuring tool repaired only through qualified specialists using original spare parts.** This ensures that the safety of the measuring tool is maintained.
- **Do not allow children to use the laser measuring tool without supervision.** They could unintentionally blind other persons or themselves.
- **Do not operate the measuring tool in explosive environments, such as in the presence of flammable liquids, gases or dusts.** Sparks can be created in the measuring tool which may ignite the dust or fumes.

Protect the measuring tool against heat, e.g., against continuous intense sunlight, fire, water, and moisture. Danger of explosion.

- **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritations or burns.
- **In case of damage and improper use of the battery, vapours may be emitted. Ventilate the area and seek medical help in case of complaints.** The vapours can irritate the respiratory system.
- **Charge the battery pack only with the battery charger provided.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

Keep the measuring tool and the laser target plate away from cardiac pacemakers. The magnets of the measuring tool and laser target plate generate a field that can impair the function of cardiac pacemakers.

- **Keep the measuring tool and the laser target plate away from magnetic data medium and magnetically-sensitive equipment.** The effect of the magnets of the measuring tool and laser target plate can lead to irreversible data loss.

Battery Charger

Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

- **This charger is not intended for use by children and persons with physical, sensory or mental limitations or a lack of experience or knowledge. This charger can be used by children aged 8 and above and by persons who have physical, sensory or mental limitations or a lack of experience or knowledge if a person responsible for their safety supervises them or has instructed them in the safe operation of the charger and they understand the associated dangers.** Otherwise, there is a danger of operating errors and injuries.
- **Supervise children during use, cleaning and maintenance.** This will ensure that children do not play with the charger.

Keep the battery charger away from rain or moisture. Penetration of water in the battery charger increases the risk of an electric shock.

- **Charge the measuring tool only with the supplied charger.**
- **Keep the battery charger clean.** Contamination can lead to danger of an electric shock.
- **Before each use, check the battery charger, cable and plug. If damage is detected, do not use the battery charger. Never open the battery charger yourself. Have repairs performed only by a qualified technician and only using original spare parts.** Damaged battery chargers, cables and plugs increase the risk of an electric shock.
- **Do not operate the battery charger on easily inflammable surfaces (e. g., paper, textiles, etc.) or surroundings.** The heating of the battery charger during the charging process can pose a fire hazard.
- **In case of damage and improper use of the battery pack, vapours may be emitted. Provide for fresh air and seek medical help in case of complaints.** The vapours can irritate the respiratory system.
- **Products sold in GB only**: Your product is fitted with a BS 1363/A approved electric plug with internal fuse (ASTA approved to BS 1362).
  If the plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place by an authorised customer service agent. The replacement plug should have the same fuse rating as the original plug.
  The severed plug must be disposed of to avoid a possible shock hazard and should never be inserted into a mains socket elsewhere.

Laser Receiver/Remote Control

Read and observe all instructions. SAVE THESE INSTRUCTIONS FOR FUTURE REFERENCE.

- **Have the measuring tool repaired only through qualified specialists using original spare parts.** This ensures that the safety of the measuring tool is maintained.
- **Do not operate the measuring tool in explosive environments, such as in the presence of flammable liquids, gases or dusts.** Sparks can be created in the measuring tool which may ignite the dust or fumes.

Protect the measuring tool against heat, e.g., against continuous intense sunlight, fire, water, and moisture. Danger of explosion.

- **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritations or burns.
- **In case of damage and improper use of the battery, vapours may be emitted. Ventilate the area and seek medical help in case of complaints.** The vapours can irritate the respiratory system.
- **Charge the battery pack only with the battery charger provided.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.

Product Description and Specifications

Intended Use

Rotational Laser Level GRL 500 H

The measuring tool is intended for determining and checking precise horizontal partitions.

The measuring tool is intended for outdoor use, but can also be used indoors.

Rotational Laser Level GRL 500 HV

The measuring tool is intended for determining and checking precise horizontal partitions, vertical lines, building lines and plumb points.

The measuring tool is intended for outdoor use, but can also be used indoors.

Laser Receiver LR 50

The laser receiver is designed to quickly locate rotating laser beams and to remote-control the rotational laser level.

The laser receiver is suitable for indoor and outdoor use.

Note: The LR 50 functions both as a laser receiver and as a remote control. To make descriptions and instructions easier to read, the LR 50 is referred to only as a "laser receiver" in the following text.

Product Features

The numbering of the product features refers to the illustration of the rotational laser level, battery charger and laser receiver on the graphics page.

Rotational Laser Level

1 Plumb beam (GRL 500 HV)
2 Laser beam outlet
3 Prism cover (aluminium, glass)
4 Theft alarm LED
5 Charge contacts for laser receiver
6 Charging/storage station for laser receiver
7 Laser beam
8 Laser warning label
9 Serial number of the rotational laser level
10 Tripod mount 5/8" (vertical) (GRL 500 HV)
11 Charge socket cover
12 Tripod mount 5/8" (horizontal)
13 Reset button
14 Socket for charge connector

Laser Receiver

15 Display
16 Centre mark
17 On/Off button
18 Slope button, up
19 Centre line mode button
20 Slope button, down
21 Sleep mode button
22 Theft alarm button
23 Button for selecting the measuring accuracy
24 Audio signal/volume button
25 Calibration button
26 Reception area for the laser beam
27 Serial number of laser receiver
28 Charge contacts

Indicator elements of laser receiver

29 Battery charge-control indicator for rotational laser level
30 Battery charge-control indicator for laser receiver
31 Text display for slope/error
32 Text display for relative height/calibration interval
33 RF communication indicator
34 Out-of-temperature-range indicator
35 Calibration interval indicator
36 Theft alarm indicator
37 Out-of-level indicator
38 Shock-warning indicator
39 Direction indicator "move upward"
40 Direction indicator "move downward"
41 Slope mode indicator
42 Centre line mode indicator
43 Centre line indicator
44 Sleep mode indicator
45 Indicator for audio signal/volume
46 Indicator for measuring accuracy "Fine"
47 Indicator for measuring accuracy "Medium"
48 Indicator for measuring accuracy "Coarse"

Charger

49 Battery charger
50 Charge connector
51 Connector plug
52 Power plug

Accessories/Spare parts

53 Measuring rod clamp
54 Locking screw for measuring rod clamp
55 Construction laser measuring rod*
56 Fastening screw for measuring rod clamp
57 Spirit level of measuring rod clamp
58 Slot for laser receiver
59 Wall mount/alignment unit*
60 Fastening screw of the wall mount*
61 Screw of the alignment unit*
62 5/8" screw on wall mount*
63 Tripod*
64 Laser viewing glasses*
65 Case

***Accessories shown or described are not part of the standard delivery scope of the product. A complete overview of accessories can be found in our accessories program.**

Technical Data

Rotational Laser Level	GRL 500 H	GRL 500 HV
Article number	3 601 K61 A..	3 601 K61 B..
Working range (radius) – without laser receiver, approx. [1)] – with laser receiver, approx.	 10 m 250 m	 10 m 250 m
Levelling Accuracy [2) 3)] – Horizontal – Vertical	 ±0.05 mm/m –	 ±0.05 mm/m ±0.1 mm/m
Self-levelling range, typically	±8.5 % (±5°)	±8.5 % (±5°)
Levelling duration, typically	15 s	15 s
Rotational speed	600 min^{-1}	600 min^{-1}
Single-axis slope operation (adjustable via keypad and display) Accuracy [2)]	 ±8.5 % ±0.1 %	 ±8.5 % ±0.1 %
Theft alarm system		
	–10…+50 °C	–10…+50 °C
Storage temperature	–20…+70 °C	–20…+70 °C
Relative air humidity, max.	90 %	90 %
Max. altitude	2000 m	2000 m
Laser class		
	635 nm, < 1 mW	635 nm, < 1 mW
Divergence of laser line	0.4 mrad (full angle)	0.4 mrad (full angle)
Laser beam Ø at the exit opening, approx. [2)]	4 mm	4 mm
Tripod mount – Vertical – Horizontal	 5/8" –	 5/8" 5/8"
Weight according to EPTA-Procedure 01:2014	2.3 kg	2.3 kg
Dimensions (length x width x height)	234 x 217 x 194 mm	234 x 217 x 194 mm
Degree of protection	IP 56 (protected against dust and powerful water jets)	IP 56 (protected against dust and powerful water jets)
Battery	**Li-Ion**	**Li-Ion**
Rated voltage	7.4 V	7.4 V
Capacity	3 Ah	3 Ah
Number of battery cells		
	25 h	25 h

1) The working range (radius) can be reduced due to unfavourable ambient conditions (e.g. direct sunlight).

2) at 20 °C

3) alongside the axes

For clear identification of your rotational laser level, see the serial number **9** on the type plate.

Laser Receiver/Remote Control	LR 50
Article number	3 601 K69 A..
Receivable wavelength	625 – 645 nm
Working range (radius)[1) 2)] – Laser Receiver with Rotational Laser Level – Remote Control	 250 m 150 m
Receiving angle	70° (± 35°)
Measuring accuracy[3)] – Setting “fine” – Setting “medium” – Setting “coarse ”	 ± 1 mm ± 2 mm ± 3 mm ± 5 mm ± 7 mm ± 10 mm
Display size	62 x 31 mm
Reception area	100 x 18 mm
Operating temperature	– 10 °C ... + 50 °C
Storage temperature	– 20 °C ... + 70 °C
Relative air humidity, max.	90 %
Max. altitude	2000 m
Activation setting for sleep mode – After 30 mins without button press – After 30 mins without any laser detection	 ● ●
Theft alarm system	0 – 150 m
Calibration interval indicator	●
Weight according to EPTA-Procedure 01:2014	0.3 kg
Dimensions (length x width x height)	152 x 77 x 32 mm
Degree of protection	IP 56 (protected against dust and powerful water jets)
Battery	**Li-Ion**
Rated voltage	7.4 V
Capacity	1 Ah
Number of battery cells	2
Operating time, approx.	25 h[4)]

1) The working range (radius) can be reduced due to unfavourable ambient conditions (e. g. direct sunlight).

2) depends on clearance between laser receiver and rotational laser level

3) at a distance of 30 m

4) with display illumination deactivated

The serial number **27** on the type plate is used to clearly identify your laser receiver/remote control.

Battery Charger	
Article number	2 610 A16 4..
Charging time	approx. 3 h
Output voltage	12 V⎓
Charging current	5 A
Protection class	⧈/II

Assembly

Charging the Batteries of the Measuring Tool and Laser Receiver (see figures A – B)

- ▶ **Do not use a different battery charger.** The battery charger provided is matched to the lithium-ion battery installed in your measuring tool.
- ▶ **Observe the mains voltage!** The voltage of the power source must correspond with the data on the type plate of the battery charger.

IMPORTANT **The measuring tool and laser receiver must be charged only in dry indoor areas.** The charging cable is not permitted for charging outdoors or in moist environments.

Note: The batteries of the measuring tool and laser receiver are supplied partially charged. To ensure full capacity of the batteries, completely charge the batteries before the first use.

The lithium-ion battery can be charged at any time without reducing its service life. Interrupting the charging procedure does not damage the battery.

Charge-control Indicator

The measuring tool must be switched on (see “Switching On”, page 38) to display the battery charge status of the measuring tool and laser receiver.

Display Indications	Meaning	Capacity	Remaining measuring time, approx.
29 **30**	Battery fully charged.	60 – 100 %	15 – 25 h
29 **30**	Battery partially charged.	40 – 60 %	10 – 15 h
29 **30**	Battery partially charged.	20 – 40 %	5 – 10 h
29 **30**	Battery partially charged.	10 – 20 %	2,5 – 5 h
29 **30**	Battery should be recharged.	0 – 10 %	0 – 2,5 h

If the measuring tool is switched off and the laser receiver is in the charging/storage station **6**, the battery charge status can be displayed as follows:

– Press the sleep mode button **21** until the audio signal sounds.
The battery charge-control indicators **29** and **30** are displayed.

The display illumination switches off again after 5 s.

Battery Charging

– Clean soiled charger contacts using a dry cloth.
– Plug the charge connector **51** into the socket provided on the charger **49**.

The measuring tool can be recharged independently of the laser receiver, but the laser receiver can only be recharged together with the measuring tool. The measuring tool and the laser receiver cannot be used during the charging process.

Measuring tool (see figure A):
– Open the cover **11** of the charge socket **14**.
– Plug the power plug **52** of the power supply into the socket outlet and the charge connector **50** into the charge socket **14**.

Laser Receiver (see figure B):
– Slide the laser receiver into the charging/storage station **6**.
– Open the cover **11** of the charge socket **14**.
– Plug the power plug **52** of the power supply into the socket outlet and the charge connector **50** into the charge socket **14**.

Display Indications	Meaning
29	Batteries charging.
30	The segments flash successively during charging.

The measuring tool and the laser receiver will switch off after charging.

Disconnect the battery charger from the mains supply when not using it for longer periods.

► **Protect the battery charger against moisture!**

Recommendations for Optimal Handling of the Battery

Store the measuring tool and the laser receiver only within the permitted temperature range, see “Technical Data”. As an example, do not leave them in the car in summer.

A significantly reduced working period after charging indicates that the battery is used and must be replaced.

Observe the notes for disposal.

Operation

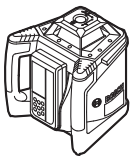
Initial Operation

► **Keep the measuring tool and the laser receiver dry and protect them from direct sunlight.**

► **Do not expose the measuring tool and the laser receiver to extreme temperatures or variations in temperature.** For example, do not leave them in a car for extended periods of time. In case of large variations in temperature, allow the measuring tool and the laser receiver to adjust to the ambient temperature before putting them into operation. The precision of the measuring tool and the laser receiver may be compromised if exposed to extreme temperatures or variations in temperature.

► **Avoid heavy impact to or falling down of the measuring tool.** After severe exterior effects to the measuring tool, it is recommended to carry out an accuracy check (see “Accuracy Check of the Measuring Tool”, page 43) each time before continuing to work.

Setting Up the Measuring Tool



Horizontal mode
(GRL 500 H/
GRL 500 HV)

Vertical mode
(GRL 500 HV)

– Position the measuring tool on a stable surface in the horizontal or vertical position, mount it to a tripod or to the wall mount **59** with alignment unit.

Due to the high levelling accuracy, the measuring tool reacts sensitively to ground vibrations and position changes. Therefore, pay attention that the position of the measuring tool is stable in order to avoid operational interruptions due to re-levelling.

Operating the Measuring Tool (see figure C)

The measuring tool is operated using the buttons on the laser receiver. Operation can be carried out either directly at the measuring tool (laser receiver docked in charging/storage station **6**) or via RF communication (laser receiver acts as a remote control).

Operating States

The system consisting of measuring tool and laser receiver knows 3 operating states:

– **Operating**
All functions of the measuring tool and laser receiver are activated.
See “Switching On”, page 38.
– **Sleep mode**
To save energy, most of the functions of the measuring tool are deactivated for 2 h maximum.
The theft alarm system and the anti-drift system are still activated.
All settings (audio signal/volume, measuring accuracy, slope, etc.) are saved.
See “Sleep Mode”, page 38.
– **Switched off**
All functions of the measuring tool and laser receiver are deactivated.
See “Switching Off”, page 38, and “Automatic Shutdown”, page 38.

Switching On and Off

► **Do not point the laser beam at persons or animals and do not look into the laser beam yourself, not even from a large distance.**

► **Do not leave the switched-on measuring tool unattended and switch the measuring tool off after use.** Other persons could be blinded by the laser beam.

Note: Before using the measuring tool, you should always perform an accuracy check (see “Accuracy Check of the Measuring Tool”, page 43).

Initial Operation

Note: In their delivery condition, the measuring tool and laser receiver are paired (= laser receiver can perform the remote control functions).

To save energy, only switch the measuring tool and the laser receiver on when you are using them.

Switching On

– To switch on the measuring tool, slide the laser receiver into the charging/storage station **6** and then press the On/Off button **17**.

or

– Slide the laser receiver into the charging/storage station **6** and remove it from the charging/storage station again. To switch on the measuring tool, you then have to press the On/Off button **17** within 30 minutes.

Outcome
– All display indicators light up briefly.
– Automatic levelling starts (see “Automatic Levelling”, page 40).
– The anti-drift system is activated 30 s after automatic levelling (see “Anti-Drift System (ADS)”, page 40).

The measuring tool then emits the laser beam **7** (GRL 500 H) or the laser beam **7** and the plumb beam **1** (GRL 500 HV).

Switching Off

– Press the On/Off button **17** for approx. 2 s.

Outcome
– The rotation stops and the laser beam is switched off.
– All display indicators and the display illumination are switched off.

Note: If the laser receiver and the rotational laser level are switched off, the laser receiver first has to be docked back in the charging/storage station **6** to switch the tool on.

Sleep Mode

The laser receiver can be used to put the measuring tool into sleep mode for maximum 2 hours.

– To switch on sleep mode, press the sleep mode button **21**.

In sleep mode, the sleep mode indicator **44** on the laser receiver lights up and the theft alarm indicator **36** also lights up if the theft alarm system is activated.

The theft alarm LED **4** on the measuring tool flashes if the theft alarm system is activated.

All other indicators and the laser beam are switched off. The anti-drift system remains activated.

– To end sleep mode, press the sleep mode button **21** again.

Sleep mode is automatically switched on if the laser beam does not run through the reception area **26** for more than 30 minutes or the buttons on the laser receiver are not pressed for more than 30 minutes.

Note: If the laser receiver and the rotational laser level are in sleep mode for more than 2 h, both are automatically switched off. The laser receiver first has to be docked back in the charging/storage station **6** to switch the tool on.

The default setting in the delivery condition is [Sleep mode function activated].

– To deactivate the sleep mode function, simultaneously press the On/Off button **17** and the sleep mode button **21** for approx. 2 s while the measuring tool is switched on.

The new state [Sleep mode function deactivated = **SLP OFF**] and the sleep mode indicator **44** will be shown on the display for approx. 3 s.

This setting is not saved when the tool is switched off. The measuring tool always starts with the sleep mode function activated.

– To activate the sleep mode function, simultaneously press the On/Off button **17** and the sleep mode button **21** for approx. 2 s while the measuring tool is switched on.

The new state [Sleep mode function activated = **SLP On**] and the sleep mode indicator **44** will be shown on the display for approx. 3 s.

Automatic Shutdown

The measuring tool and the laser receiver switch off automatically under certain conditions (see “Switching Off”, page 38 for outcome):
– The measuring tool does not receive any commands for more than 2.5 h.
– The buttons on the laser receiver are not pressed for more than 2.5 h.
– The measuring tool is outside of the self-levelling range for more than 2.5 h and the error code resulting from this is not rectified (see “Correction of Malfunctions”, page 47).
– The measuring tool is not switched on again within 2 h when sleep mode is activated.
– The anti-drift system is triggered for more than 2.5 h.
– The measuring tool is outside of the operating temperature range.

Before the measuring tool and laser receiver automatically switch off, an audio signal sounds and the out-of-temperature-range indicator **34** flashes for approx. 5 s.

After automatic shutdown:
– If applicable, wait until the measuring tool and the laser receiver are back in the operating temperature range.
– If required, reposition the measuring tool and switch it on again.

RTC (Real Time Clock) Battery

If the calibration interval indicator **35** flashes for approx. 10 s after the tool is switched on, the RTC battery and the integrated battery are weak. The calibration interval will no longer be monitored.
– Contact an authorised service agent for Bosch power tools.

Theft Alarm System

The system consisting of measuring tool and laser receiver has two security mechanisms to help prevent theft:
– The measuring tool can only be operated using the laser receiver; there is no control panel on the measuring tool.
– Both audible and visual indications are given on the measuring tool and on the laser receiver when the measuring tool is moved away from the reference point.

Activating the Theft Alarm System

The default setting in the delivery condition is [Theft alarm system deactivated].

– Press the theft alarm button **22** while the measuring tool is switched on.
The theft alarm system is activated.
The theft alarm indicator **36** and the theft alarm LED **4** light up.

The setting for the theft alarm system is saved when the tool is switched off.

To deactivate, press the theft alarm button **22** while the measuring tool is switched on.

Applications of the Theft Alarm System

Application	Security mechanism
Measuring tool switched on. *or* Measuring tool in sleep mode.	Alarm system activated Theft alarm indicator **36** lights up continuously Theft alarm LED **4** flashes slowly on the measuring tool
Measuring tool switched off. Laser receiver switched off and **not** in the charging/storage station **6**.	Alarm system deactivated Theft alarm indicator **36** is not displayed Theft alarm LED **4** does not light up on the measuring tool

If the theft alarm system is activated and the measuring tool moves away from the current location for more than 5 s, the alarm system will be triggered:
– An audio signal is emitted on the measuring tool and on the laser receiver.
The A-weighted sound pressure level of the audio signal is up to 110 dB(A) and cannot be adjusted using the volume setting of the normal audio signal.
► **Do not hold the laser receiver close to your ear!** The loud audio signal can cause hearing defects.
– All operating functions are locked.
– The theft alarm LED **4** on the measuring tool flashes quickly.
– The theft alarm indicator **36** on the laser receiver flashes.
– To **switch off** the triggered alarm, press the theft alarm button **22**.
The audio signal is switched off.
All operating functions are unlocked.
All settings are reset to the default settings when switching the tool on (see “Switching On”, page 38).
The theft alarm system is activated again.

Indicators for Checking Calibration (Calibration Warning)

If the calibration of the measuring tool has to be checked, this is shown on the display of the laser receiver after switching on by means of various indicators in combination with the “**CAL**” indicator.

Note: The sensors for a calibration warning (calibration interval, storage temperature, shocks to the measuring tool) are active after the tool is started up for the first time.

Display Indications Calibration warning	Cause
CAL lights up Calibration interval indicator **35** lights up	The calibration interval (every 12 months) has expired.
CAL lights up Out-of-temperature-range indicator **34** lights up	The measuring tool was stored outside of the storage temperature range.
CAL lights up Shock-warning indicator **38** lights up	The measuring tool suffered a severe shock (e.g. impact on the floor after a fall).

The indicators for checking calibration are displayed for a short time, then go out and are not displayed again until the tool is switched on.

Switching Off the Calibration Warning Indicators

You can switch off the indicators until the cause of the calibration warning occurs again.

– Press the calibration button **25** for approx. 2 s while the calibration warning is being displayed.
The indicators for checking calibration are not displayed again until the cause of the calibration warning occurs again.

Recommended procedure after an indication to check calibration

Step		see page
1	Check levelling accuracy	43
2a	*Deviation in 30 m is within the maximum permitted limits of ± 1.5 mm:* Switch off calibration warning indicators	39
2b	*Deviation in 30 m is outside of the maximum permitted limits of ± 1.5 mm:* Calibrate measuring tool	44
3b	Check levelling accuracy	43
4b	*Deviation in 30 m after calibration is within the maximum permitted limits of ± 1.5 mm:* Work can be performed without loss of accuracy.	
	Deviation in 30 m after calibration is still outside of the maximum permitted limits of ± 1.5 mm: Have measuring tool checked by a Bosch customer service agent	

Operating Modes

Orientation of X- and Y-Axis

The orientation of the X- and Y-axis is marked on the housing above the rotation head.

Rotational Operation

The measuring tool operates with a fixed rotational speed (600 rpm), which is suitable for use of a laser receiver.

Operating Modes Overview

- Automatic Levelling
  after switching on/during operation
- Single-axis Slope Operation
- Centre Line Mode
- Anti-Drift System (ADS)
- Line Control in Vertical Mode (GRL 500 HV)

Automatic Levelling

Automatic Levelling after Switching On

After switching on, the measuring tool checks the horizontal position and automatically compensates for irregularities within the self-levelling range of approx. 8.5% (5°).

The out-of-level indicator **37** flashes during levelling.

GRL 500 HV: Once it has been switched on, the measuring tool automatically detects the horizontal or vertical position. To change between the horizontal and vertical position, you can reposition it without switching it off.

Automatic Levelling during Operation

If after a position change the measuring tool is outside of the self-levelling range of approx. 8.5 % (5°), levelling is no longer possible and an error code is displayed (see “Correction of Malfunctions”, page 47).

If the measuring tool is levelled, it constantly checks the level position. Re-levelling is automatically performed if there are any position changes. To prevent incorrect measurements, the rotation of the laser beam stops during the levelling process.

Single-axis Slope Operation

When the measuring tool is in the horizontal position, the X-axis is automatically levelled while in single-axis slope operation.

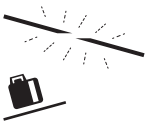
The rotational plane can be turned around the X-axis in a range of ±8.5%.

Note: If you want to perform a slope setting immediately after switching on, you have to wait for the automatic levelling (see “Automatic Levelling after Switching On”, page 40). This prevents incorrect measuring results.

Slope Setting

Slope setting is possible within a range of ± 8.5%.

– Press and hold the slope button **18** *or* **20** until the desired slope value is shown on the display.
– Let go of the slope button **18** *or* **20** again.



The out-of-level indicator **37** flashes during slope setting.

The slope mode indicator **41** lights up continuously.

– Simultaneously press the slope buttons **18** *and* **20**.
Slope setting is deactivated.
Automatic levelling is activated (see “Automatic Levelling”, page 40).

If the slope range of ± 8.5 % is exceeded, the slope mode indicator **41** goes out and an error code is displayed (see “Correction of Malfunctions”, page 47).

Centre Line Mode (see figure D)

In centre line mode, the measuring tool automatically tries to find the centre line of the laser receiver by moving the rotation head upward and downward.

– Press the centre line mode button **19** for approx. 2 s.
Automatic upward and downward movement of the rotation head starts.

Search Sequence:

1. Rotation head pivots upwards to the stop.

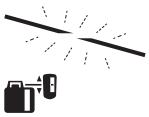
2. Laser beam is switched on.

3. Rotation head pivots downwards.

4a. Laser beam hits the reception area **26** and finds the centre line.

or

4b. Laser beam reaches the end of the pivoting range without finding a reception area; an error code is displayed (see "Correction of Malfunctions", page 47).



The out-of-level indicator **37** flashes during the search for the centre line.

The indicators for centre line mode **42** light up continuously.

As soon as the laser beam hits the reception area **26**, a beep sounds until the centre line is found.

The speed at which the rotation head moves will slow down as soon as the laser beam hits the reception area **26**.

When the centre line has been found, the measuring tool automatically switches off the centre line mode. The set slope is saved and shown on the display.

– To cancel centre line mode during the search, press the centre line mode button **19**.

or

– Simultaneously press the slope buttons **18** *and* **20** to activate automatic levelling.

Speeding Up Finding the Centre Line of the Laser Receiver

Searching for the centre line of the laser receiver always begins with an upward movement of the rotation head. The direction of the movement can be changed if the laser beam is below the centre line and not yet in the reception area of the laser receiver.

– Press the centre line mode button **19** for approx. 2 s.
Automatic upward and downward movement of the rotation head starts.

– Press the slope button **20**.
The rotation head is moved downwards.

Anti-Drift System (ADS)

The measuring tool has an anti-drift system; after position changes or shock to the measuring tool, or in case of ground vibrations, it keeps the measuring tool from levelling in at changed heights, and thus prevents vertical errors.

The anti-drift system is activated approx. 30 s after the measuring tool has been switched on.

During activation the shock-warning indicator **38** flashes slowly. The indicator lights up continuously after activation.

If the vertical position of the measuring tool is changed or a severe shock is registered, then the anti-drift system is triggered: the rotation of

the laser is stopped and the shock-warning indicator **38** flashes. In addition, a beep sounds for 5 s on the laser receiver.

– Press the On/Off button **17 briefly** when the anti-drift system is triggered.
Automatic levelling starts (see "Automatic Levelling during Operation", page 40).

– Now check the height of the laser beam against a reference point and correct the height of the measuring tool if necessary.

Deactivating the Anti-Drift System

The anti-drift system can be deactivated **during operation** of the measuring tool.

– Press the On/Off button **17**.
The anti-drift system is deactivated. The shock-warning indicator **38** is no longer displayed.

This setting is not saved when the tool is switched off. The measuring tool always starts with the anti-drift system activated.

Line Control in Vertical Mode (GRL 500 HV)

When the measuring tool is in the vertical mode, you can position the rotational plane along the X-axis for simple alignment or parallel alignment.

– To turn the rotational plane clockwise, press the slope button **18**; to turn it counterclockwise, press the slope button **20**.

Positioning is possible within a range of ± 8.5%.

The speed at which the rotation head moves begins slowly and continually increases.

Centre Line Mode in Line Control (see figure E)

In centre line mode, the measuring tool automatically tries to find the centre line of the laser receiver by moving the rotation head left and right.

– Press the centre line mode button **19** for approx. 2 s.
Automatic left/right movement of the rotation head starts.

Search Sequence:

1. Rotation head pivots right to the stop.

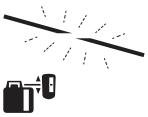
2. Laser beam is switched on.

3. Rotation head pivots left.

4a. Laser beam hits the reception area **26** and finds the centre line.

or

4b. Laser beam reaches the end of the pivoting range without finding a reception area; an error code is displayed (see "Correction of Malfunctions", page 47).



The out-of-level indicator **37** flashes during the search for the centre line.

The indicators for centre line mode **42** light up continuously.

As soon as the laser beam hits the reception area **26**, a beep sounds until the centre line is found.

The speed at which the rotation head moves will slow down as soon as the laser beam hits the reception area **26**.

When the centre line has been found, the measuring tool automatically switches off the centre line mode.

– To cancel centre line mode during the search, press the centre line mode button **19**.

or

– Simultaneously press the slope buttons **18** *and* **20** to activate automatic levelling.

Speeding Up Finding the Centre Line of the Laser Receiver

Searching for the centre line of the laser receiver always begins with a right-hand movement of the rotation head. The direction of the movement can be changed if the laser beam is to the left of the centre line and not yet in the reception area of the laser receiver.

– Press the centre line mode button **19** for approx. 2 s.
The rotation head is automatically moved to the right.

– Press the slope button **20**.
The rotation head is moved downwards.

Relative Height Display (see figure F)

The distance between the rotational plane and the centre line is shown on the display as an absolute value (in [mm] or [inch]).

See also “Setting the Display of the Units”, page 46.

Working with the Laser Receiver

For outdoor use or longer distances indoors, use the laser receiver to find the laser beam.

– Place the laser receiver so that the laser beam can reach the reception area **26**.

RF Communication between Measuring Tool and Remote Control/Laser Receivers

In its delivery condition, the laser receiver provided LR 50 acts as a **remote control** for the measuring tool via a wireless connection.

– The RF communication indicator **33** is displayed to indicate the remote control function on the laser receiver.

Multiple laser receivers LR 50 can be assigned to the measuring tool.

– Switch off the measuring tool and the laser receiver.
– Dock the additional laser receiver in the charging/storage station **6**.

– Press the On/Off button **17**.

– The RF communication indicator **33** is displayed to indicate the remote control function on the laser receiver.

– Remove the laser receiver from the charging/storage station again. To switch on the measuring tool, you then have to press the On/Off button **17** within 30 minutes.

Note: If multiple laser receivers have been assigned to a measuring tool, then the **last assigned laser receiver** acts as the **remote control**. The other laser receivers are then purely laser receivers.

Settings such as measuring accuracy or audio signal can be set individually for each laser receiver.

If the remote control/laser receiver is switched off, the measuring tool switches off. All other laser receivers each have to switch off separately.

If the RF communication is lost, the RF communication indicator **33** flashes and an audio signal sounds.

This signals that warnings (e.g. theft, anti-drift, calibration) will not be shown and the measuring tool will no longer be remote-controlled.

Note: Sleep mode of the measuring tool can be switched on and off only by pressing the sleep mode button **21** on the **remote control/laser receiver**.

Setting the Audio Signal/Volume

The position of the laser beam on the reception area **26** can be indicated via an audio signal.

You can choose between two volumes or switch off the audio signal.

The default setting in the delivery condition is [Normal audio signal].

– Press the audio signal/volume button **24** repeatedly until the desired setting is reached.
No indicator: audio signal off

Normal audio signal

Loud audio signal

The setting for audio signal/volume is saved when the tool is switched off.

Selecting the Setting of the Centre Line Indicator

You can specify the accuracy with which the position of the laser beam is indicated as "centred" on the reception area.

The default setting in the delivery condition is [Measuring accuracy "medium/3 mm"].

– Press the measuring accuracy setting button **23** repeatedly until the desired setting is reached.

Example

The measuring accuracy level "fine"/"medium"/"coarse" and the exact value are shown on the display.

The setting for measuring accuracy is saved when the tool is switched off.

Direction Indicators

The position of the laser beam in the reception area **26** is indicated:

– on the display **15** on the front and rear side of the laser receiver by the direction indicator "move upward" **39**, the direction indicator "move downward" **40** or the centre line indicator **43**,
– optionally by the audio signal.

Laser receiver too low: If the laser beam runs through the upper half of the reception area **26**, then the direction indicator "move upward" **39** lights up and the plus value of the relative height display **32** shows how much the laser receiver has to be moved upwards.

If the audio signal is switched on, a signal sounds in a slow rhythm.

– Move the laser receiver upwards in the arrow direction. When the centre mark **16** is approached, only the tip of the direction indicator **39** is shown.

Laser receiver too high: If the laser beam runs through the lower half of the reception area **26**, then the direction indicator "move downward" **40** lights up and the minus value of the relative height display **32** shows how much the laser receiver has to be moved downwards.

If the audio signal is switched on, a signal sounds in a fast rhythm.

– Move the laser receiver downwards in the arrow direction. When the centre mark **16** is approached, only the tip of the direction indicator **40** is shown.

Laser receiver centred: If the laser beam runs through the reception area **26** at the height of the centre mark **16**, then the centre line indicator **43** lights up. If the audio signal is switched on, a continuous tone sounds.

If the measuring tool is moved so that the laser beam leaves the reception area **26** again, the most recently displayed direction indicator **39** or **40** will flash for approx. 5 s.

Strobe shield™ Protection

The laser receiver has electronic filters for strobe light. The filters protect against, for example, interference from the warning lights of construction machinery.

Marking

When the laser beam runs through the centre of the reception area **26**, its height can be marked at the centre mark **16** left and right of the laser receiver.

When marking, take care to align the measuring tool exactly vertical (for horizontal laser beam), or horizontal (for vertical laser beam), as otherwise the marks are offset with respect to the laser beam.

Display Illumination

The default setting in the delivery condition is [Display illumination activated].

If no button is pressed after approx. 30 seconds, the display illumination goes out.

When any button is pressed or when the laser beam hits the reception area, the display illumination is switched back on.

– To switch off the display illumination, simultaneously press the On/Off button **17** and the audio signal/volume button **24**.

The setting for display illumination is saved when the tool is switched off.

Attaching with the Measuring Rod Clamp (see figure G)

With the measuring rod clamp **53**, the laser receiver can be fastened to a construction laser measuring rod **55** (accessory) as well as to other auxiliary equipment with a width of up to 65 mm.

– Fit the slot **58** to the measuring rod clamp **53** using the fastening screw **56**.
– Loosen the locking screw **54**, slide the measuring rod clamp onto the construction laser measuring rod **55**, for example, and retighten the locking screw **54**.
– The measuring rod clamp **53** can be horizontally aligned with help of the spirit level **57**.
  A measuring tool mounted out-of-level leads to faulty measurements.
– Slide the laser receiver into the slot **58**.

Accuracy Check of the Measuring Tool

The following tasks should be performed only by well-trained and qualified persons. The legalities with regard to performing an accuracy check or calibration of a measuring tool must be known.

Influences on Accuracy

The ambient temperature has the greatest influence. Especially temperature differences occurring from the ground upward can divert the laser beam.

In addition to external influences, device-specific influences (e.g. falls or heavy impacts) can also lead to deviations. For this reason, check the calibration each time before beginning work.

The deviations play a role in excess of approx. 20 m measuring distance and can easily reach two to four times the deviation at 100 m.

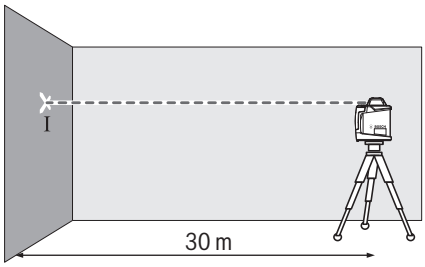
Because the largest difference in temperature layers is close to the ground, the measuring tool should always be mounted on a tripod when measuring distances exceeding 20 m. If possible, also set up the measuring tool in the centre of the work area.

If the measuring tool exceeds the maximum deviation in one of the measuring procedures described below, perform a calibration (see "Calibrating the Measuring Tool", page 44) or have the measuring tool checked by a Bosch customer service agent.

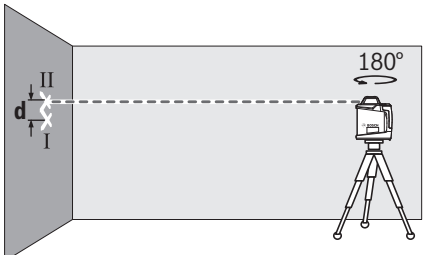
Checking the Levelling Accuracy in the Horizontal Position

A free measuring distance of 30 m on a firm surface in front of a wall is required for the check. A complete measuring procedure each must be carried out for the X- and Y-axis.

– Mount the measuring tool in the horizontal position onto a tripod or place it on a firm and level surface at a distance of 30 m to the wall. Switch the measuring tool on.
– After the levelling, mark the centre of the laser beam on the wall (point I).



– Rotate the measuring tool by 180°, allow it to level in and mark the centre point of the laser beam on the wall (point II). Take care that point II is as vertical as possible above or below point I.



– The difference **d** of both marked points I and II on the wall results in the actual height deviation of the measuring tool for the measured axis.

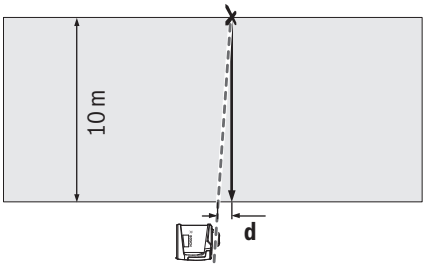
Repeat the measuring procedure for the other axis. For this, turn the measuring tool by 90° before starting the measuring procedure.

The maximum permitted deviation on the 30 m measuring distance is as follows:
30 m x ± 0.05 mm/m = ± 1.5 mm.
The difference **d** between points I and II must therefore be maximum 3 mm in each of the two measuring procedures.

Checking the Levelling Accuracy in the Vertical Position (GRL 500 HV)

A free measuring distance of 10 m on a firm surface in front of a wall is required for the check. Fasten a plumb bob rope to the wall.

– Mount the measuring tool in the vertical position onto a tripod, or place it on a firm and level surface. Switch the measuring tool on and allow it to level.
– Align the measuring tool such that the laser beam impinges centrally on the plumb bob rope at the upper end. The difference **d** between laser beam and plumb bob rope at the bottom end of the rope results in the deviation of the measuring tool to the vertical line.



The maximum permitted deviation over a 10 m high measuring distance is as follows:
10 m x ± 0.1 mm/m = ± 1 mm.
The difference **d** must therefore be maximum 1 mm.

Calibrating the Measuring Tool

The following tasks should be performed only by well-trained and qualified persons. The legalities with regard to performing an accuracy check or calibration of a measuring tool must be known.

► **Perform calibration of the measuring tool meticulously or have the measuring tool checked by a Bosch customer service agent.** Inaccurate calibration leads to incorrect measuring results.

► **Start the calibration only if you have to perform a calibration of the measuring tool.** As soon as the measuring tool is in calibration mode, you must perform the calibration meticulously to the end in order to ensure that no incorrect measuring results are produced afterwards.

Note: After calibration, the indicators for checking calibration are not displayed again until the cause of the calibration warning occurs again.

A free measuring distance of at least 30 m on a firm surface in front of a straight wall is required for the calibration.

Always calibrate all axes (GRL 500 H: X-axis and Y-axis; GRL 500 HV: X-axis, Y-axis and Z-axis).

X-Axis Calibration

– Mount the measuring tool in the horizontal position on a tripod **63** (accessory).
– Place the tripod 30 m in front of the wall. The X-axis indicator imprinted on the measuring tool must be pointing perpendicular to the wall.
– Switch the measuring tool on.

– Simultaneously press the calibration button **25** and the slope button **18** for approx. 2 s.

The symbol for calibrating the X-axis is shown on the display.

The out-of-level indicator **37** flashes during automatic levelling.

– Wait until the measuring tool is levelled in.
– Use the laser receiver to find the centre line and transfer the height “X1” of the centre line onto the wall.
– Turn the measuring tool 180° without adjusting the height of the tripod.
– Wait until the out-of-level indicator **37** stops flashing and the measuring tool is levelled in.
– Use the laser receiver to find the centre line and transfer the new height “X2” of the centre line onto the wall.
– Determine the exact centre between the centre lines “X1” and “X2” and position the laser receiver on it using the centre mark **16**.

– Press the slope button **18** *or* **20** until the centre line indicator **43** lights up continuously. If the audio signal is switched on, a continuous tone sounds.
– Press the calibration button **25** to save the calibration.

The symbol for completing calibration is shown on the display.

– **In order to rule out faulty calibration after completion of the calibration**, you must check the levelling accuracy (see “Checking the Levelling Accuracy in the Horizontal Position”. page 44).
If the deviation is still outside of the maximum permitted limit of ± 1.5 mm, have the measuring tool checked by a Bosch customer service agent.

Y-Axis Calibration

– Mount the measuring tool in the horizontal position on a tripod **63** (accessory).
– Place the tripod 30 m in front of the wall. The Y-axis indicator imprinted on the measuring tool must be pointing perpendicular to the wall.
– Switch the measuring tool on.

– Simultaneously press the calibration button **25** and the slope button **20** for approx. 2 s.

The symbol for calibrating the Y-axis is shown on the display.

The out-of-level indicator **37** flashes during automatic levelling.

– Wait until the measuring tool is levelled in.
– Use the laser receiver to find the centre line and transfer the height “Y1” of the centre line onto the wall.
– Turn the measuring tool 180° without adjusting the height of the tripod.
– Wait until the out-of-level indicator **37** stops flashing and the measuring tool is levelled in.
– Use the laser receiver to find the centre line and transfer the new height “Y2” of the centre line onto the wall.
– Determine the exact centre between the centre lines “Y1” and “Y2” and position the laser receiver on it using the centre mark **16**.

– Press the slope button **18** *or* **20** until the centre line indicator **43** lights up continuously. If the audio signal is switched on, a continuous tone sounds.
– Press the calibration button **25** to save the calibration.

The symbol for completing calibration is shown on the display.

– **In order to rule out faulty calibration after completion of the calibration**, you must check the levelling accuracy (see “Checking the Levelling Accuracy in the Horizontal Position”. page 44).
If the deviation is still outside of the maximum permitted limit of ± 1.5 mm, have the measuring tool checked by a Bosch customer service agent.

Z-Axis Calibration (GRL 500 HV)

– Mark a vertical line on the wall using a plumb line.
– Mount the measuring tool in the vertical position on a tripod **63** (accessory).
– Place the tripod 5 – 10 m in front of the wall.
– Switch the measuring tool on.

– Simultaneously press the calibration button **25** and the slope button **18** for approx. 2 s.

The symbol for calibrating the Z-axis is shown on the display.

– Align the tripod so that the laser beam crosses the vertical line on the wall.

The out-of-level indicator **37** flashes during automatic levelling.

– Wait until the measuring tool is levelled in.

– Press the slope button **18** *or* **20** until the laser beam is as parallel as possible to the vertical line on the wall.

– If you do not achieve congruence, repeat the previous steps (align tripod, allow measuring tool to level in, align laser beam using slope buttons).

– Press the calibration button **25** to save the calibration.

The symbol for completing calibration is shown on the display.

– **In order to rule out faulty calibration after completion of the calibration**, you must check the levelling accuracy (see “Checking the Levelling Accuracy in the Vertical Position”. page 44).
If the deviation is still outside of the maximum permitted limit of ± 1 mm, have the measuring tool checked by a Bosch customer service agent.

Working Advice

► **The measuring tool is equipped with a radio interface. Local operating restrictions, e. g. in airplanes or hospitals, are to be observed.**

► **Always use the centre of the laser line for marking.** The width of the laser line changes with the distance.

Setting the Display of the Units

The distance between rotational plane and centre line is shown on the display in [mm] or [inch: decimals/fractions].

The default setting in the delivery condition is [mm].

– Simultaneously press the measuring accuracy setting button **23** and the slope button **20** repeatedly until the desired setting is reached.

The setting for the units is saved when the tool is switched off.

Laser Viewing Glasses (Accessory)

The laser viewing glasses filter out the ambient light. This makes the red light of the laser appear brighter for the eyes.

► **Do not use the laser viewing glasses as safety goggles.** The laser viewing glasses are used for improved visualisation of the laser beam, but they do not protect against laser radiation.

► **Do not use the laser viewing glasses as sun glasses or in traffic.** The laser viewing glasses do not afford complete UV protection and reduce colour perception.

Working with the Tripod (Accessory)

The measuring tool is equipped with a 5/8" tripod mount for horizontal operation on a tripod. Place the measuring tool via the tripod mount onto the 5/8" male thread of the tripod and screw the locking screw of the tripod tight.

On a tripod **63** with a measuring scale on the elevator column, the height difference can be adjusted directly.

Working with Wall Mount/Alignment Unit (Accessory)

You can also mount the measuring tool to the wall mount with alignment unit **59**. For this, screw the 5/8" screw **62** of the wall mount into the tripod mount of the measuring tool.

Mounting to a wall: Mounting to a wall is recommended, e. g., for work above the elevation height of tripods or for work on unstable surfaces and without tripod. For this, fasten the wall mount **59**, with the measuring tool mounted, as vertical as possible to a wall.

For mounting to the wall, you can either fasten the wall mount **59** with fastening screw **60** to a lath (width maximal 8 mm) or hang it up with two hooks.

Mounting on a tripod: The wall mount **59** can also be screwed onto a tripod with the tripod mount on the back side. This method of fastening is especially recommended for work where the rotational plane is to be aligned with a reference line.

With the alignment unit, the mounted measuring tool can be moved vertically (when mounted to the wall) or horizontally (when mounted to a tripod) within a range of approx. 16 cm. For this, loosen screw **61** on the alignment unit, move the measuring tool to the desired position, and retighten screw **61** again.

Working with the Measuring Rod (Accessory) (see figure H)

For checking irregularities or projecting gradients, it is recommended to use the measuring rod **55** together with the laser receiver.

A relative millimetre scale (±50 cm) is marked on the top of the measuring rod **55**. Its zero height can be preset at the bottom of the elevator column. This allows for direct reading of deviations from the specified height.

Work Examples

Checking the Depth of Building Pits (see figure I)

– Position the measuring tool on a firm surface or mount it to a tripod **63**.

– Working with tripod: Align the laser beam to the requested height. Project or check the height at the target location. Working without tripod: Determine the height difference between the laser beam and the height at the reference point. Project or check the measured height difference at the target location.

When measuring over long distances, the measuring tool should always be set up in the centre of the work surface and on a tripod, in order to reduce interferences.

– When working on unstable ground, mount the measuring tool on the tripod **63**. Ensure that the anti-drift system is activated in order to prevent incorrect measurements in the event of ground movements or shocks to the measuring tool.

Correction of Malfunctions

Malfunctions with Error Codes

The error code of a malfunction is shown on the display.

– Rectify the malfunction (see “Corrective Measure”).

– Afterwards, simultaneously press the centre line mode button **19** and audio signal/volume button **24**.
If the malfunction was successfully rectified, the error code indication goes out and automatic levelling will start (see “Automatic Levelling during Operation”, page 40).
If the malfunction persists, have the measuring tool checked by a Bosch customer service agent.

Error Code Indication	Problem	Corrective Measure
001	The X-axis of the measuring tool is outside of the self-levelling range of approx. 8.5 % (5°).	– Reposition the measuring tool along the X-axis.
002	The Y-axis of the measuring tool is outside of the self-levelling range of approx. 8.5 % (5°).	– Reposition the measuring tool along the Y-axis.
003 (GRL 500 HV)	The Z-axis of the measuring tool in vertical mode is outside of the self-levelling range of approx. 8.5 % (5°).	– Reposition the measuring tool in vertical mode along the Z-axis.
004	Measuring tool is at a slant of more than 8.5 % after a position change.	– Reposition the measuring tool.
	The slope range of ± 8.5 % has been exceeded in single-axis slope operation.	– Press the slope button **18** *or* **20** until a slope value of less than 8.5% is shown on the display (see “Slope Setting”, page 40).
005	Duration of automatic levelling has been exceeded. Measuring tool cannot be levelled in.	– Place the measuring tool on a stable surface or mount it in a stable manner on a tripod. The environment must be vibration-free.
006	The desired slope is not reached in single-axis slope operation.	– Place the measuring tool on a stable surface or mount it in a stable manner on a tripod. The environment must be vibration-free.
007	The rotation head of the laser is not rotating.	– Simultaneously press the centre line mode button **19** and audio signal/volume button **24**. – Switch the measuring tool off (see “Switching Off”, page 38). – Switch the measuring tool back on.
008	During the search in centre line mode, the laser beam reaches the end of the pivoting range without finding the reception area of the laser receiver.	– Check whether the visual contact between measuring tool and laser receiver has been interrupted and reposition the measuring tool if necessary. If the error continues to occur, reduce the distance between measuring tool and laser receiver.
009	External influences (e.g. falls or heavy impacts) are interfering with centre line mode.	– Reposition the measuring tool. Place the measuring tool on a stable surface or mount it in a stable manner on a tripod. The environment must be vibration-free. – Restart the search to find the centre line (see “Centre Line Mode”, page 40). Ensure that the pivoting range of the laser beam is not interrupted by persons or other visual obstacles during the search. If the error continues to occur, reduce the distance between measuring tool and laser receiver.
020	General error	– Simultaneously press the centre line mode button **19** and audio signal/volume button **24**. – Switch the measuring tool off (see “Switching Off”, page 38). – Switch the measuring tool back on.
033	Ambient light is too bright for the laser receiver.	– Shade the reception area.

Malfunctions without Error Codes

Problem	Corrective Measure
Measuring tool or laser receiver cannot be switched on.	– Place the measuring tool on a stable surface or mount it in a stable manner on a tripod. The environment must be vibration-free. If the error persists, contact an authorised Bosch customer service agent.
	– Charge the battery of the measuring tool (see “Charging the Batteries of the Measuring Tool and Laser Receiver”, page 36). – Switch the measuring tool back on. If the error persists, contact an authorised Bosch customer service agent.
Batteries of measuring tool and/or laser receiver are not being charged.	– Wait until the measuring tool and/or the laser receiver reach (return to) the optimum charging temperature range (0 °C ... +40 °C).
The battery of the laser receiver became empty while the measuring tool and laser receiver were switched on.	– Press the reset button **13**. Measuring tool is switched off.
The laser receiver is defective, freezes or has been lost, and the theft alarm is triggered.	– Press the reset button **13**. The audio signal and the measuring tool are switched off.
A temporary software malfunction is occurring on the laser receiver.	 – To reset the laser receiver to the delivery condition, simultaneously press the On/Off button **17** and the measuring accuracy setting button **23**. The default settings for measuring accuracy (medium), display illumination (activated), unit display (mm) and audio signal (normal) will be restored.

Maintenance and Service

Maintenance and Cleaning

– Keep the rotational laser level, battery charger and laser receiver clean at all times.
– Do not immerse the rotational laser level, battery charger and laser receiver into water or other fluids.
– Wipe off debris using a moist and soft cloth. Do not use any cleaning agents or solvents.
– Particularly clean the surfaces at the outlet opening of the rotational laser level regularly and pay attention for any lint.

After-sales Service and Application Service

Our after-sales service responds to your questions concerning maintenance and repair of your product as well as spare parts. Exploded views and information on spare parts can also be found under:

Bosch’s application service team will gladly answer questions concerning our products and their accessories.

In all correspondence and spare parts orders, please always include the 10-digit article number given on the nameplate of the product.