



Professional

GRL 250 HV | GRL 300 HV | GRL 300 HVG | RC 1

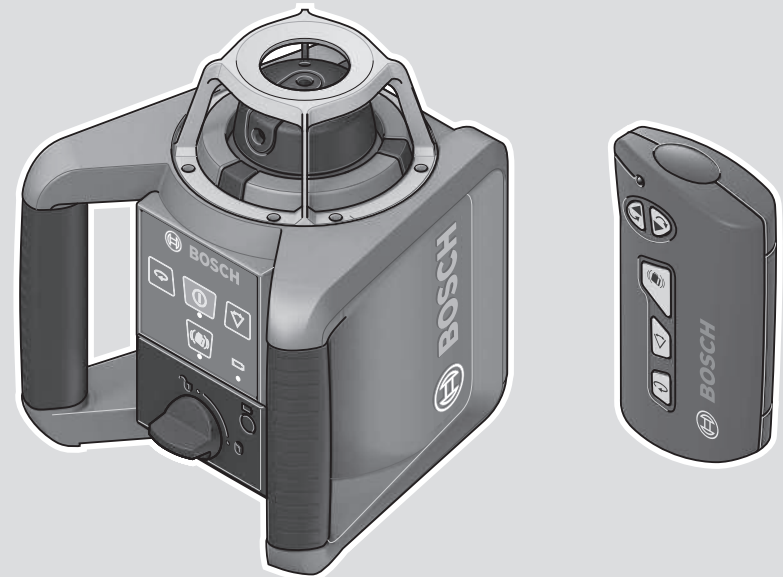
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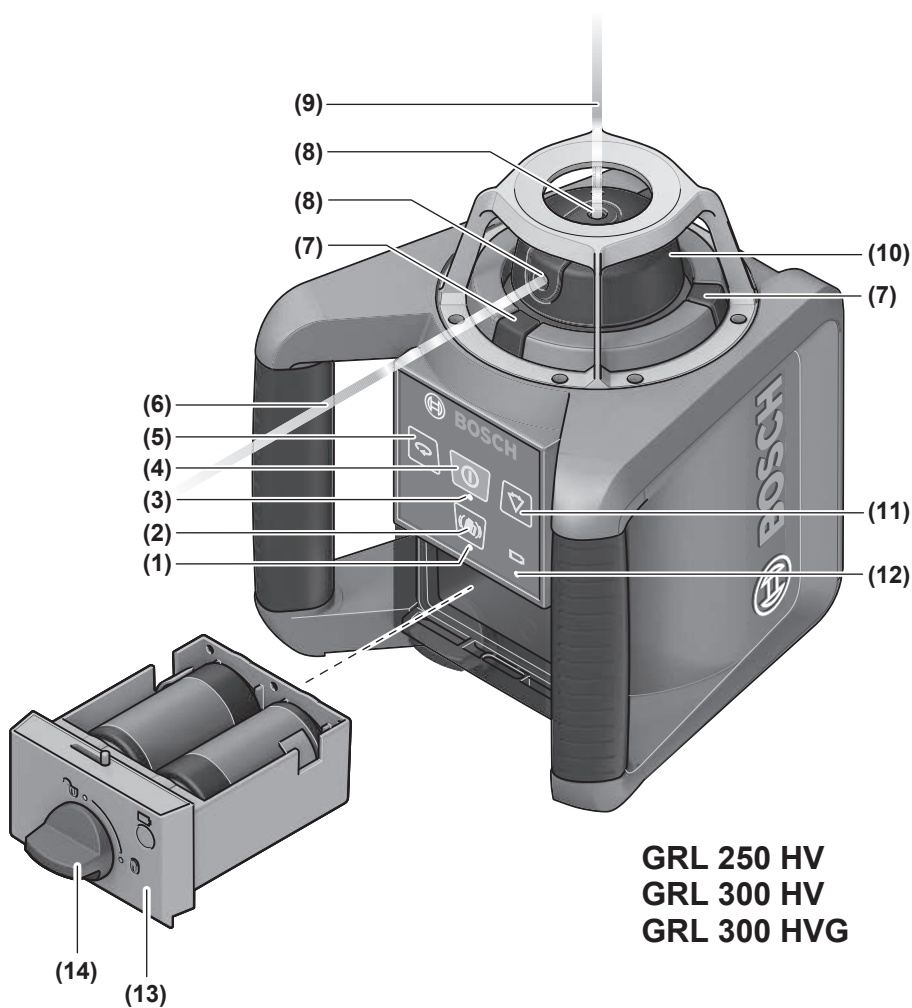
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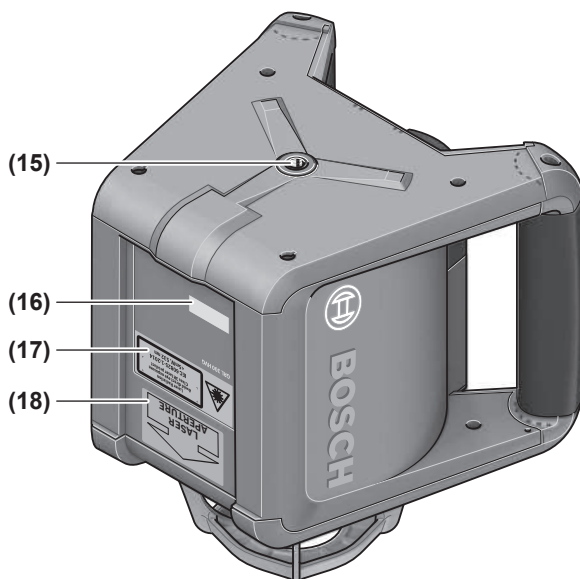


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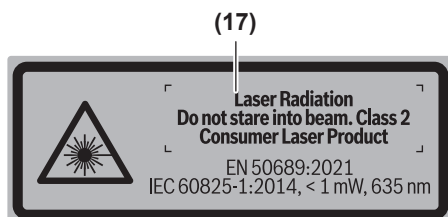




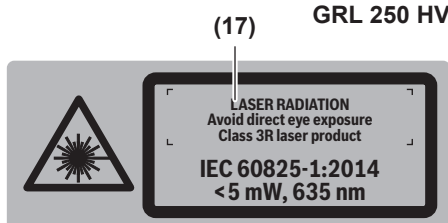




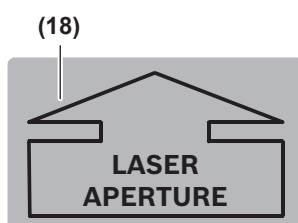
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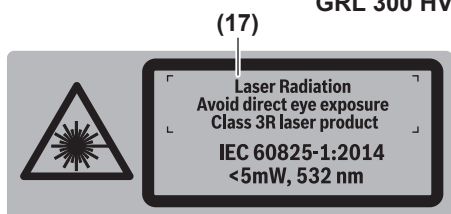
GRL 250 HV



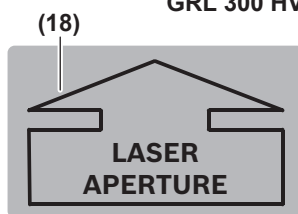
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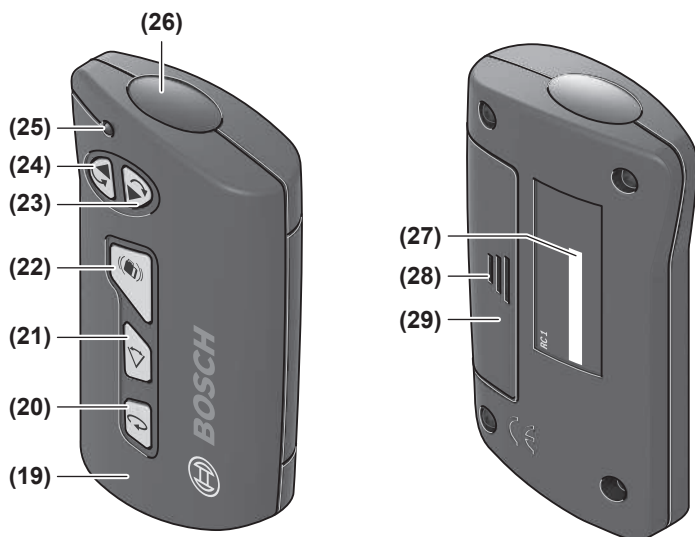
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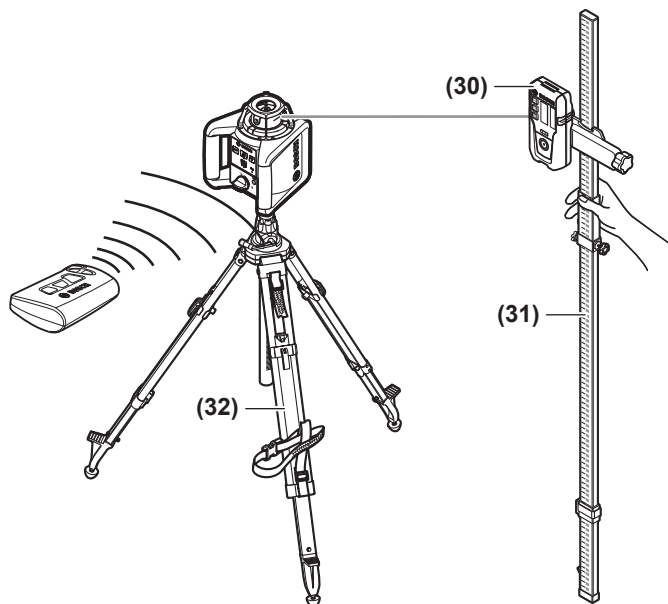
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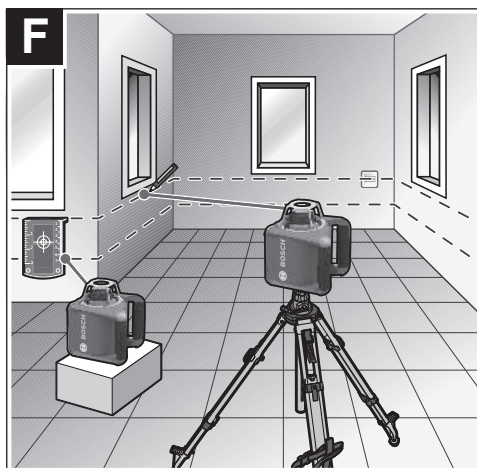
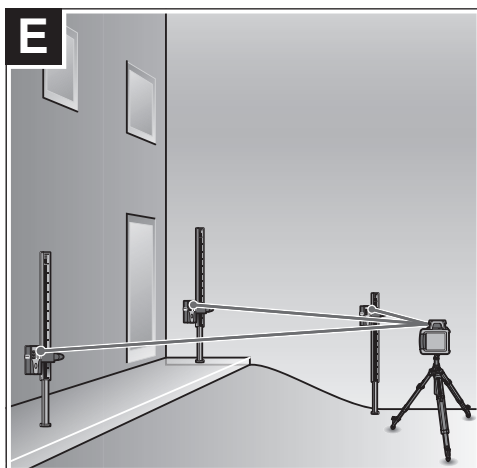
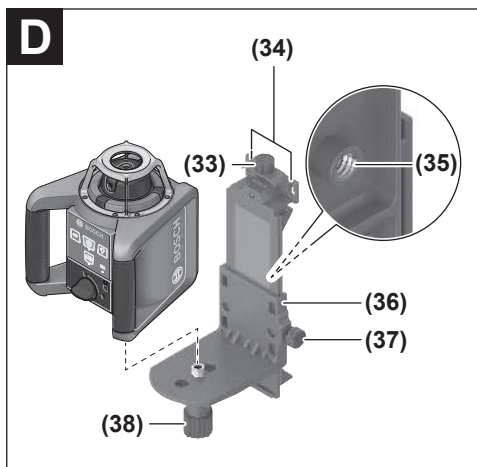
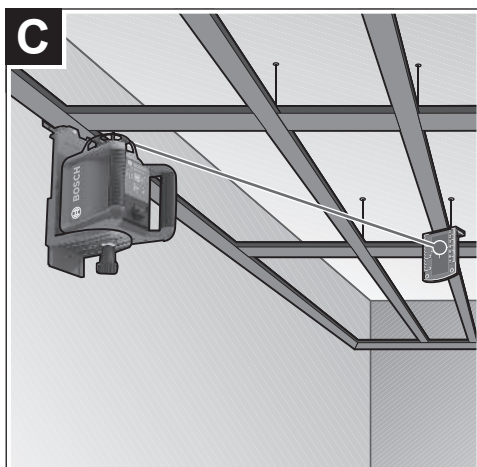
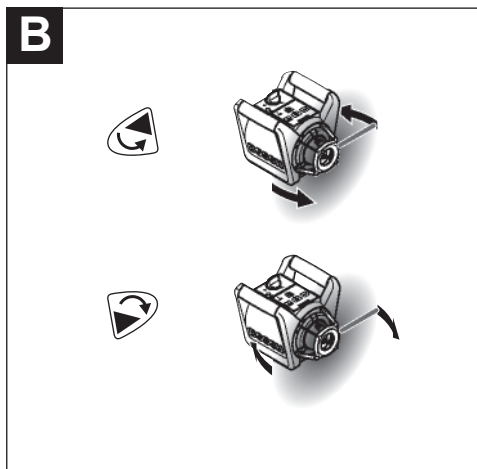
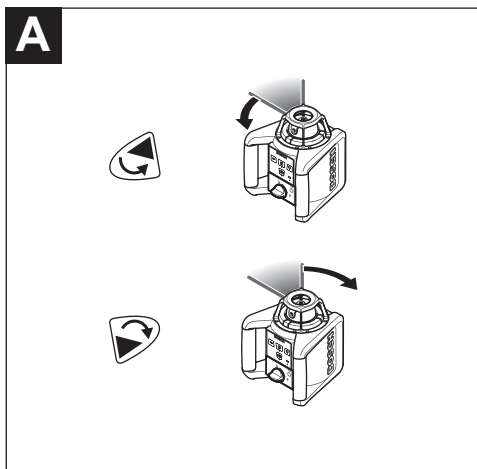


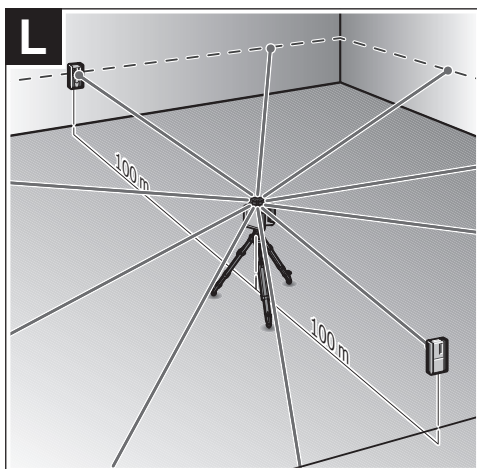
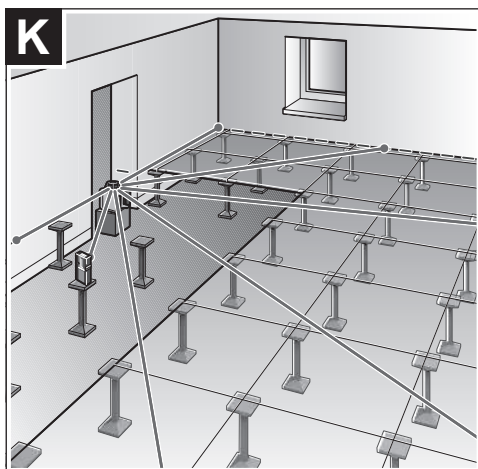
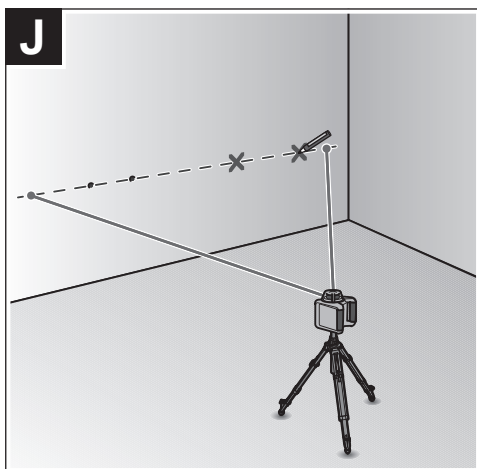
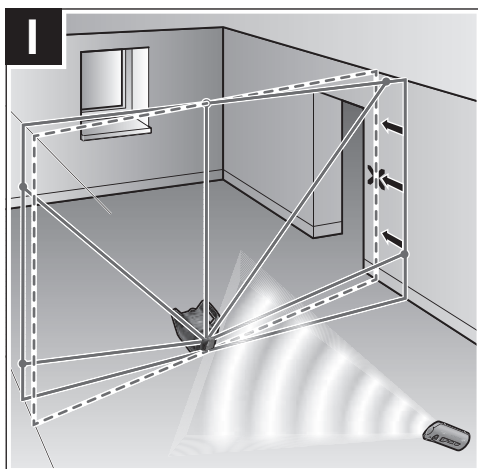
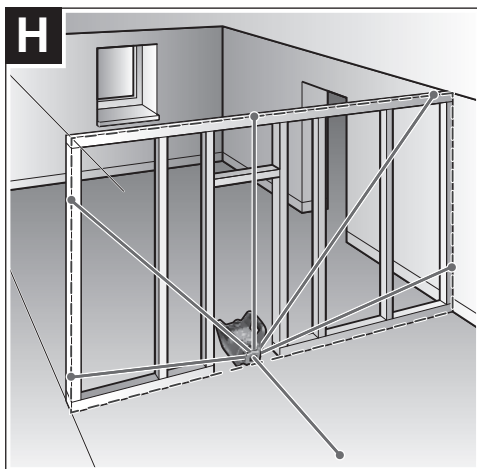
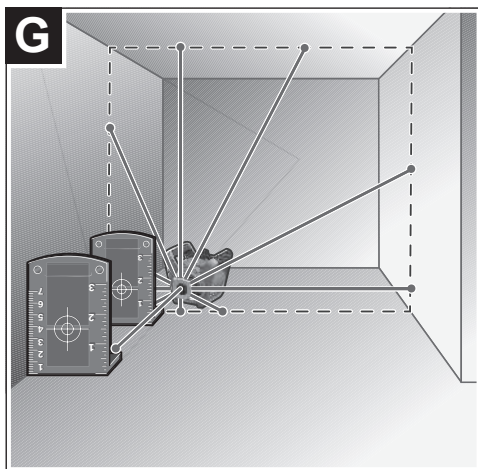
GRL 300 HVG

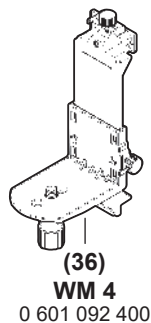
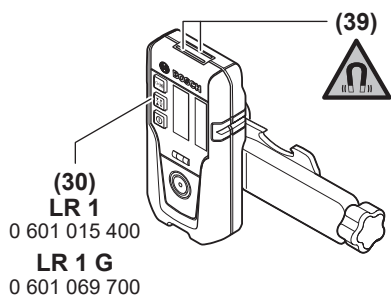


RC 1

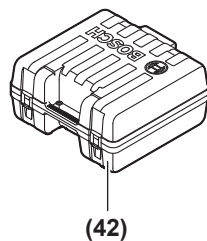
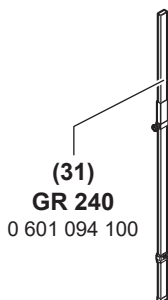
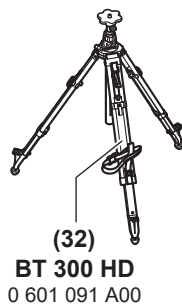
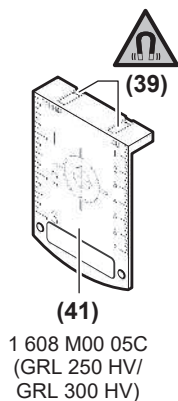








(40)
1 608 M00 05B
(GRL 250 HV/
GRL 300 HV)
1 608 M00 05J
(GRL 300 HVG)



English

Safety Instructions for Rotary Lasers and Remote Control



All instructions must be read and observed in order to enable work to be carried out safely. The integrated safeguards may be compromised if these instructions are not observed. Never make warning signs unrecognisable. **STORE THESE INSTRUCTIONS IN A SAFE PLACE AND INCLUDE THEM WITH THE PRODUCT WHEN GIVING IT TO A THIRD PARTY.**

- ▶ **Warning!** If operating or adjustment devices other than those specified here are used or other procedures are carried out, this can lead to dangerous exposure to radiation.
- ▶ The measuring tool is delivered with a laser warning sign (marked in the illustration of the measuring tool on the graphics page).
- ▶ If the text of the laser 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 make any modifications to the laser equipment.
- ▶ Do not use the laser goggles (accessory) as protective goggles. The laser goggles make the laser beam easier to see; they do not protect you against laser radiation.
- ▶ Do not use the laser goggles (accessory) as sunglasses or while driving. The laser goggles do not provide full UV protection and impair your ability to see colours.
- ▶ Have your product serviced only by a qualified specialist using only original replacement parts. This will ensure that the safety of the product is maintained.
- ▶ Do not let children use the laser measuring tool unsupervised. They could unintentionally blind themselves or other persons.
- ▶ Do not operate in potentially explosive atmospheres, such as in the presence of flammable liquids, gases or dusts. Sparks may be produced, which can ignite dust or fumes.

Additional Safety Instructions for GRL 250 HV :



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

- ▶ If laser radiation hits your eye, you must close your eyes and immediately turn your head away from the beam.

Additional Safety Instructions for GRL 300 HV, GRL 300 HVG :

- ▶ The laser exit holes on the measuring tool are marked with warning labels. Take note of their position when using the measuring tool.
- ▶ If the text of these labels is not in your national language, stick the provided warning label in your national language over it before operating for the first time.
- ▶ Comply with any applicable national regulations when using a laser from laser class 3R. Failure to comply with these regulations may cause injuries.
- ▶ The measuring tool should only be operated by people who have experience in using laser tools. According to EN 60825-1, this includes knowledge of the biological impact of the laser on eyes and skin as well as the correct application of laser safety guidelines to prevent hazards.
- ▶ Mark out the area where the measuring tool is being used with suitable laser warning signs. This will prevent people who are not using the measuring tool from entering the danger zone.
- ▶ Do not store the measuring tool in places which can be accessed by unauthorised individuals. People who are unfamiliar with the operation of the measuring tool may cause harm to themselves or others.



Do not direct the laser beam at persons or animals and do not stare into the laser beam yourself. This measuring tool generates laser class 3R laser radiation according to EN 60825-1. Looking into the laser beam directly can cause eye injuries – even from far away.

- ▶ Ensure that the laser radiation area is guarded or screened. Restricting the laser radiation to controlled areas prevents eye injuries being caused to people who are not using the laser measuring tool.
- ▶ Always position the measuring tool such that the laser beams travel far above or below eye level. This ensures that no eye injuries are caused.
- ▶ Avoid laser beam reflections on smooth surfaces such as windows or mirrors. Even the reflected laser beam can cause eye injuries.

Additional Safety Instructions

- ▶ Do not use any optical instruments such as binoculars or magnifying glasses to view the radiation source. Doing so can damage your eyes.



Keep the magnetic accessories away from implants and other medical devices, e.g. pacemakers or insulin pumps. The magnets in the accessories generate a field that can impair the function of implants and medical devices.

- ▶ Keep the magnetic accessories away from magnetic data storage media and magnetically-sensitive devices. The effect of the magnets in the accessories can lead to irreversible data loss.

Product Description and Specifications

Please observe the illustrations at the beginning of this operating manual.

Intended Use

Rotary laser

The measuring tool is intended for establishing and checking exactly horizontal height profiles, vertical lines, alignments and plumb points.

The measuring tool is suitable for indoor and outdoor use.

GRL 250 HV:

This product is a consumer laser product in accordance with EN 50689.

Remote control

The remote control is intended for controlling the **Bosch** rotary lasers via infrared.

The remote control is suitable for indoor and outdoor use.

Product Features

The numbering of the product features refers to the illustration of the measuring tool and remote control on the graphics pages.

Rotary laser

- (1) Shock-warning function indicator
- (2) Shock-warning button
- (3) Status indicator
- (4) On/off button
- (5) Rotational operation button
- (6) Variable laser beam
- (7) Sensor for remote control
- (8) Laser beam outlet aperture
- (9) Plumb point up
- (10) Rotation head
- (11) Line operation button
- (12) Battery warning

- (13) Battery compartment
- (14) Locking mechanism of the battery compartment
- (15) 5/8" tripod mount
- (16) Serial number
- (17) Laser warning label
- (18) Label laser aperture (GRL 300 HV/GRL 300 HVG)

Remote Control

- (19) Remote control
- (20) Rotational operation button
- (21) Line operation button
- (22) Shock-warning reset button
- (23) Button for clockwise rotation
- (24) Button for anticlockwise rotation
- (25) Signal transmission indicator
- (26) Infrared beam outlet aperture
- (27) Serial number
- (28) Battery compartment cover locking mechanism
- (29) Battery compartment cover

Accessories/replacement parts

- (30) Laser receiver^{a)}
- (31) Measuring rod^{a)}
- (32) Tripod^{a)}
- (33) Fastening screw for wall mount^{a)}
- (34) Fixing holes for wall mount^{a)}
- (35) 5/8" tripod mount for wall mount^{a)}
- (36) Wall mount/alignment unit^{a)}
- (37) Alignment unit bolt^{a)}
- (38) 5/8" screw for wall mount^{a)}
- (39) Magnet^{a)}
- (40) Laser viewing glasses^{a)}
- (41) Laser target plate^{a)}
- (42) Case^{a)}

a) **This accessory is not part of the standard scope of delivery.**

Technical data

Rotary laser	GRL 250 HV	GRL 300 HV	GRL 300 HVG
Article number	3 601 K61 6..	3 601 K61 5..	3 601 K61 7..
Working range (radius) ^{A)B)}			
– without laser receiver, approx.	30 m	30 m	50 m
– with laser receiver, approx.	0.5–125 m	0.5–150 m	0.5–150 m
Levelling accuracy at 30 m distance ^{A)C)}	±3 mm	±3 mm	±3 mm
Typical self-levelling range	±8 % (±4.6°)	±8 % (±4.6°)	±8 % (±4.6°)
Typical levelling time	15 s	15 s	15 s
Rotation speed	150/300/600 min ⁻¹	150/300/600 min ⁻¹	150/300/600 min ⁻¹
Aperture angle for line operation	10/25/50°	10/25/50°	10/25/50°

Rotary laser	GRL 250 HV	GRL 300 HV	GRL 300 HVG
Operating temperature	-10 °C to +50 °C	-10 °C to +50 °C	0 °C to +40 °C
Storage temperature	-20 °C to +70 °C	-20 °C to +70 °C	-20 °C to +70 °C
Max. altitude	2000 m	2000 m	2000 m
Relative air humidity max.	90 %	90 %	90 %
Pollution degree according to IEC 61010-1	2 ^{D)}	2 ^{D)}	2 ^{D)}
Laser class	2	3R	3R
Laser type	< 1 mW, 635 nm	< 5 mW, 635 nm	< 5 mW, 532 nm
Divergence	0.4 mrad (full angle)	0.4 mrad (full angle)	0.4 mrad (full angle)
Tripod mount, horizontal	5/8"-11	5/8"-11	5/8"-11
Non-rechargeable batteries (alkaline manganese)	2 × 1.5 V LR20 (D)	2 × 1.5 V LR20 (D)	2 × 1.5 V LR20 (D)
Weight ^{E)}	1.4 kg	1.5 kg	1.5 kg
Dimensions (length × width × height)	190 × 180 × 170 mm	190 × 180 × 170 mm	190 × 180 × 170 mm
Protection rating	IP54	IP54	IP54

A) At 25 °C

B) The working range may be reduced by unfavourable environmental conditions (e.g. direct sunlight).

C) Along the axes

D) Only non-conductive deposits occur, whereby occasional temporary conductivity caused by condensation is expected.

E) Weight without batteries

The serial number **(16)** on the type plate is used to clearly identify your measuring tool.

Remote control	RC 1
Article number	3 601 K69 9..
Working range ^{A)}	30 m
Operating temperature	-10 °C to +50 °C
Storage temperature	-20 °C to +70 °C
Max. altitude	2000 m
Relative air humidity max.	90 %
Pollution degree according to IEC 61010-1	2 ^{B)}
Battery	1 × 1.5 V LR6 (AA)
Weight ^{C)}	0.045 kg

A) The working range may be reduced by unfavourable environmental conditions (e.g. direct sunlight).

B) Only non-conductive deposits occur, whereby occasional temporary conductivity caused by condensation is expected.

C) Weight without battery

For clear identification of your remote control, see the serial number **(27)** on the type plate.

Assembly

Remote Control Power Supply

Using alkali-manganese batteries is recommended to operate the remote control.

To open the battery compartment cover **(29)**, push the locking mechanism **(28)** in the direction of the arrow and remove the battery compartment cover. Insert the battery.

When inserting the batteries, ensure that the polarity is correct according to the illustration on the inside of the battery compartment.

► **Remove the battery from the remote control when not using it for longer periods.** The battery can corrode during prolonged storage in the remote control.

Measuring Tool Power Supply

Inserting/changing the batteries

It is recommended that you use alkaline manganese batteries to operate the measuring tool.

To remove the battery compartment **(13)**, turn the locking mechanism **(14)** to position . Pull the battery compartment out of the measuring tool and insert the batteries.

When inserting the batteries, ensure that the polarity is correct according to the illustration on the inside of the battery compartment.

Always replace all the batteries at the same time. Only use batteries from the same manufacturer and which have the same capacity.

Slide the battery compartment (13) into the measuring tool and turn the locking mechanism (14) to position 0.

- ▶ **Take the batteries out of the measuring tool when you are not using it for a prolonged period of time.** The batteries can corrode during prolonged storage in the measuring tool.

Charge-control indicator

When the battery warning (12) flashes red for the first time, the measuring tool can still be operated for approx. 2 hours. When the battery warning (12) lights up red continuously, no further measurements can be taken. The measuring tool switches off automatically after 1 minute.

Operation

- ▶ **Protect the measuring tool and remote control against moisture and direct sunlight.**
- ▶ **Do not expose the measuring tool or remote control to any 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 remote control to adjust to the ambient temperature before putting them into operation. Before continuing work with the measuring tool, always perform an accuracy check (see "Accuracy Check of the Measuring Tool", page 14). The precision of the measuring tool may be compromised if exposed to extreme temperatures or fluctuations in temperature.
- ▶ **Avoid substantial knocks to the measuring tool and avoid dropping it.** Always carry out an accuracy check before continuing work if the measuring tool has been subjected to severe external influences (see "Accuracy Check of the Measuring Tool", page 14).

Starting Operation of the Remote Control

When pressing the operating controls, it is possible to bring the measuring tool out of its level position, so that the rotation is briefly interrupted. This effect is avoided when using the remote control.

The remote control remains ready for operation as long as a battery with sufficient voltage is inserted.

Set up the measuring tool in such a manner that the signals of the remote control can directly reach one of the sensors (7). If the remote control cannot be pointed directly at a sensor, the working range will be reduced. By reflecting the signal (e.g. against walls), the working range can be improved even for indirect signals.

After pressing a button on the remote control, the signal transmission indicator (25) will light up, indicating that a signal has been sent out.

It is not possible to switch the measuring tool on/off with the remote control.

Starting Operation of the rotary laser

- ▶ **Keep the work area free from obstacles that could reflect or obstruct the laser beam. For example, cover any reflective or shiny surfaces. Do not measure through panes of glass or similar materials.** The measurements may be distorted by a reflected or obstructed laser beam.

Setting up the measuring tool



Horizontal position



Vertical position

Position the measuring tool on a stable surface in the horizontal or vertical position, mount it on the tripod (32) or on the wall mount (36) with the alignment unit.

Due to its high levelling accuracy, the measuring tool is very sensitive to knocks and vibrations and changes in position. Take care, therefore, that the measuring tool is stable to avoid interruptions to the operation caused by releveling.

Switching On and Off

To **switch on** the measuring tool, press the on/off button (4). All indicators light up briefly. The measuring tool emits the variable laser beam (6) and the upwards plumb point (9) from the outlet apertures (8).

- ▶ **Do not direct the laser beam at persons or animals and do not stare into the laser beam yourself (even from a distance).**

The measuring tool immediately starts automatic levelling. During levelling, the status indicator (3) flashes green, the laser does not rotate and flashes.

The measuring tool is levelled in as soon as the status indicator (3) lights up green continuously and the laser lights up continuously. After levelling is completed, the measuring tool automatically starts in rotational operation.

- ▶ **Never leave the measuring tool unattended when switched on, and ensure the measuring tool is switched off after use.** Others may be blinded by the laser beam.

You can already set the operating mode during levelling with the rotational operation button (5) or the line operation button (11). In this case, the measuring tool starts in the set operating mode after levelling is completed.

To **switch off** the measuring tool, press the on/off button (4) again.

To save the batteries, the measuring tool is automatically switched off when not within the self-levelling range for more than 2 hours or when the shock warning is actuated for more than 2 hours. Reposition the measuring tool and switch on again.

Operating Modes

Operating Modes Overview

All three operating modes are possible with the measuring tool in horizontal and vertical position.



Rotational operation

Rotational operation is especially recommended when using the laser receiver. It is possible to select between different rotational speeds.



Line operation

In this operating mode, the variable laser beam moves within a defined aperture angle. This increases the visibility of the laser beam in comparison to rotational operation. You can select between different aperture angles.



Point operation

In this operating mode, the best visibility of the variable laser beam can be reached. For example, it is used to easily project heights or to check building lines.

Line and point operation are not suitable for use with the laser receiver (30).



Rotational Operation

Each time after switching on, the measuring tool is in rotational operation mode with standard rotational speed (300 min⁻¹).

To switch from line operation to rotational operation, press the rotational operation button (5) or the rotational operation button (20) on the remote control.

To change the rotational speed, press the rotational operation button (5) or rotational operation button (20) on the remote control until the required speed is reached.

When working with the laser receiver, the highest rotational speed should be set. When not working with the laser receiver, reduce the rotational speed for improved visibility of the laser beam and use the laser goggles (40).



Line Operation/Point Operation

To switch to line or point operation, press the line operation button (11) or the line operation button (21) on the remote control.

The measuring tool switches to line operation with the smallest aperture angle.

To change the aperture angle, press the line operation button (11) or the line operation button (21) on the remote control until the required operating mode is achieved. The aperture angle is gradually increased each time it is pressed; at the same time, the rotational speed is increased with each setting.

After the largest aperture angle, the measuring tool switches to point operation after brief post-pulsation. Pressing the line operation button (11) again takes you back to line operation with the smallest aperture angle.

Note: Due to inertia, it is possible for the laser to slightly move beyond the end point of the laser line.

Functions



Turning the Line/Point in a Horizontal Position within the Rotational Plane (see figure A)

When the measuring tool is in a horizontal position, the laser line or the laser point can be positioned within the rotational plane of the laser. Rotation is possible by 360°.

For this, manually turn the rotation head (10) to the required position or use the remote control: Press the button for clockwise rotation (23) on the remote control to rotate clockwise, and the button for anticlockwise rotation (24) on the remote control to rotate anticlockwise. In rotational operation, pressing the buttons has no effect.



Turning the Rotational Plane when in the Vertical Position (see figure B)

When the measuring tool is in the vertical position, it is possible to rotate the laser point, laser line or rotational plane around the vertical axis for easy sighting out or parallel alignment in a range of ±8 %.

Press the button for clockwise rotation (23) on the remote control to rotate clockwise.

Press the button for anticlockwise rotation (24) on the remote control to rotate anticlockwise.

Automatic Levelling

Overview

The measuring tool will automatically detect the horizontal or vertical position. To **change between the horizontal and the vertical position**, switch the measuring tool off, reposition it and switch it on again.

After switching on, the measuring tool checks the horizontal and vertical position and automatically levels out any unevenness within the self-levelling range of approx. ±8 % (±4.6°).

During levelling, the status indicator (3) flashes green, the laser does not rotate and flashes.

The measuring tool is levelled in as soon as the status indicator (3) lights up green continuously and the laser lights up continuously. After levelling is completed, the measuring tool automatically starts in rotational operation.

When the measuring tool is out-of-level by more than 8 % after switching it on or after a position change, levelling in is no longer possible. In this case, the rotor is stopped, the laser flashes and the status indicator (3) continuously lights up red.

Reposition the measuring tool and wait for it to re-level.

Without repositioning, the laser is automatically switched off after 2 minutes and the measuring tool after 2 hours.

When the measuring tool is levelled in, it continuously checks the horizontal and vertical position. Re-levelling is automatically performed if there are any position changes. To avoid faulty measurements, the rotor stops during the

levelling process, the laser flashes and the status indicator (3) flashes green.



Shock-Warning Function

The measuring tool has a shock-warning function. 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 positions, and thus prevents errors caused by a change in the measuring tool's position.

Switching on/activating the shock-warning function:

Press the shock-warning button (2). The shock-warning indicator (1) lights up green continuously. The shock warning is activated approximately 30 seconds after the shock-warning function has been switched on.

Shock warning actuated: If the levelling-accuracy range is exceeded when changing the position of the measuring tool or a severe knock is registered, the shock warning will be actuated. The laser will stop rotating, the laser beam will flash, the status indicator (3) will go out and the shock-warning indicator (1) will flash red.

The current operating mode is stored.

After the shock warning has actuated, press the shock-warning button (2) on the measuring tool or the shock-warning reset button (22) on the remote control. The shock-warning function is restarted and the measuring tool starts the levelling. As soon as the measuring tool is levelled in (levelling indicator (3) continuously lights up green), it starts in the stored operating mode.

Now check the position of the laser beam at a reference point and, if necessary, correct the height or alignment of the measuring tool.

When, after the shock-warning function has actuated, the function is not restarted by pressing the shock-warning button (2) on the measuring tool or the shock-warning reset button (22) on the remote control, the laser is automatically switched off after 2 minutes and the measuring tool after 2 hours.

Switching off the shock-warning function: Press the shock-warning button (2) once or, when the shock warning has actuated (shock-warning indicator (1) flashing red), press it twice. When the shock-warning function is switched off, the shock-warning indicator goes out.

Note: The shock-warning function cannot be switched on or off with the remote control; it can only be restarted after having actuated.

Accuracy Check of the Measuring Tool

Influences on Accuracy

The largest influence is exerted by the ambient temperature. In particular, temperature differences that occur from the ground upwards can refract the laser beam.

In order to minimise thermal influences resulting from heat rising from the floor, it is recommended that you use the measuring tool on a tripod. In addition, position the measuring tool in the centre of the work surface, wherever this is possible.

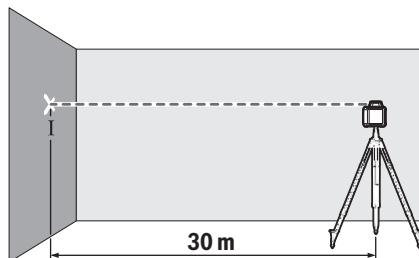
In addition to external influences, device-specific influences (e.g. falls or heavy impacts) can also lead to deviations. For this reason, check the levelling accuracy each time before beginning work.

Should the measuring tool exceed the maximum deviation during one of the tests, please have it repaired by a **Bosch** after-sales service.

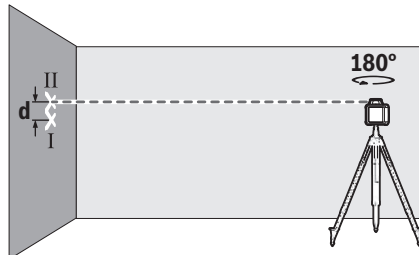
Checking the Levelling Accuracy in a Horizontal Position

For a reliable and precise result, it is recommended that you check the levelling accuracy on a free measuring distance of 30 m on firm ground in front of a wall. Carry out a complete measuring procedure for each of the two axes.

- Mount the measuring tool in a horizontal position 30 m from the wall on a tripod, or place it on a firm, level surface. Switch on the measuring tool.



- Once levelling is complete, mark the centre of the laser beam on the wall (point I).



- Rotate the measuring tool 180° without changing its position. Allow it to level in and mark the centre point of the laser beam on the wall (point II). Note that point II should preferably be positioned vertically above or below point I.

The discrepancy **d** between the two marked points I and II on the wall reveals the actual height deviation of the measuring tool for the axis being measured.

Repeat the measuring process for the other axis. To do this, turn the measuring tool by 90° before beginning the measurement.

The maximum permitted deviation on the 30 m measuring distance is as follows:

$30 \text{ m} \times \pm 0.1 \text{ mm/m} = \pm 3 \text{ mm}$. The discrepancy **d** between points I and II must therefore amount to no more than 6 mm for each of the two measuring processes.

Working Advice

► **Only the centre of the laser point or laser line must be used for marking.** The size of the laser point/the width of the laser line changes depending on the distance.

Working with the Laser Target Plate (see figure C)

The laser target plate (41) improves visibility of the laser beam in unfavourable conditions and at greater distances. The reflective surface of the laser target plate (41) improves visibility of the laser line. The transparent surface enables the laser line to be seen from behind the laser target plate.

Working with the Tripod

A tripod offers a stable, height-adjustable support surface for measuring. Place the measuring tool with the 5/8" tripod mount (15) on the thread of the tripod (32). Tighten the measuring tool using the locking screw of the tripod.

On a tripod featuring a measuring scale on its extender, you can set the height deviation straight away.

Roughly align the tripod before switching on the measuring tool.

Working with the WM 4 Wall Mount (see figure D)

You can also mount the measuring tool on the wall mount with the alignment unit (36). For this, screw the 5/8" screw (38) of the wall mount into the tripod mount (15) of the measuring tool.

Mounting on a wall: Wall-mounting is advisable, for example for work performed above the maximum extension height of tripods, or for work on unstable surfaces and without tripods.

Fasten the wall mount (36) either to a wall using screws through the fixing holes (34) or to a strip of wall using the fastening screw (33). Fit the wall mount as perpendicular as possible to the wall and ensure it is mounted in a stable way.

Mounting on a tripod: You can also screw the wall mount (36) on to a tripod (35) using the tripod mount on the back. This type of mount is particularly suited to work where the rotation level is supposed to be aligned to a reference line.

You can use the alignment unit to slide the measuring tool vertically (if mounted on the wall) or horizontally (if mounted on a tripod) up to approx. 16 cm. To do this, loosen the bolt (37) on the alignment unit, slide the measuring tool into the required position, and retighten the bolt (37).

Working with the Laser Receiver

Use the laser receiver (30) to improve detection of the laser lines in adverse lighting conditions (bright environment, direct sunlight) and over greater distances.

For rotary lasers with multiple operating modes, select the horizontal or vertical operation with the highest rotational speed.

Before working with the laser receiver, read and observe the laser receiver operating instructions.

Working with the Remote Control

When pressing the operating controls, it is possible to bring the measuring tool out of its level position, so that the rota-

tion is briefly interrupted. This effect is avoided when using the remote control.

Sensors (7) for the remote control are located on three sides of the measuring tool, including above the control panel on the front.

Working with the Measuring Rod (see figure E)

To check levels or apply slopes, it is recommended to use the measuring rod (31) together with the laser receiver.

A relative measuring scale is incorporated at the top of the measuring rod (31). You can preselect its zero at the bottom on the extender. This enables you to read deviations from the target height straight away.

Laser Goggles

The laser goggles filter out ambient light. This makes the light of the laser appear brighter to the eye.

► **Do not use the laser goggles (accessory) as protective goggles.** The laser goggles make the laser beam easier to see; they do not protect you against laser radiation.

► **Do not use the laser goggles (accessory) as sunglasses or while driving.** The laser goggles do not provide full UV protection and impair your ability to see colours.

Example applications

Projecting/Checking Heights (see figure F)

Position the measuring tool in the horizontal position on a firm support or mount it on a tripod (32).

Working with a tripod: Set the laser beam at the required height. Project or check the height at the target location.

Working without a tripod: Determine the height difference between the laser beam and the height at the reference point using the laser target plate (41). Project or check the height difference measured at the target location.

Parallel Alignment of Upwards Plumb Point/Projecting Right Angles (see figure G)

When right angles are to be projected or partition walls are to be aligned, the upwards plumb point (9) must be aligned in parallel, meaning at the same distance to a reference line (e.g. a wall).

For this, set up the measuring tool in the vertical position and position it in such a manner that the upwards plumb point runs approximately parallel to the reference line.

For the exact positioning, measure the clearance between the upwards plumb point and reference line directly on the measuring tool using the laser target plate (41). Measure the clearance between the upwards plumb point and reference line again as far away as possible from the measuring tool. Align the upwards plumb point in such a manner that it has the same clearance to the reference line as when measured directly at the measuring tool.

The right angle to the upwards plumb point (9) is indicated by the variable laser beam (6).

Indicating a perpendicular/vertical plane (see figure H)

To indicate a perpendicular or a vertical plane, set up the measuring tool in the vertical position. When the vertical plane is supposed to run at a right angle to a reference line (e.g. a wall), align the upwards plumb point **(9)** with this reference line.

The perpendicular plane is indicated by the variable laser beam **(6)**.

Aligning a Perpendicular/Vertical plane (see figure I)

To align the vertical laser line or the rotational plane against a reference point on a wall, set up the measuring tool in the vertical position, and roughly align the laser line or the rotational plane with the reference point. For precise alignment with the reference point, turn the rotational plane around the

vertical axis (see  Turning the Rotational Plane when in the Vertical Position (see figure B)", page 13).

Working without the Laser Receiver (see figure J)

Under favourable light conditions (dark environment) and for short distances, it is possible to work without the laser receiver. For improved visibility of the laser beam, either se-

lect line operation or point operation and rotate the laser beam to the target location.

Working with the Laser Receiver (see figure K)

In unfavourable lighting conditions (bright environment, direct sunlight) and for larger distances, use the laser receiver to improve detection of the laser beam **(30)**. When working with the laser receiver, select rotational operation with the highest rotational speed.

Measuring over Long Distances (see figure L)

When measuring over long distances, the laser receiver **(30)** must be used to find the laser beam. In order to reduce interferences, the measuring tool should always be set up in the centre of the work surface and on a tripod.

Working outdoors (see figure E)

The laser receiver **(30)** should always be used when working outdoors.

When working on unstable ground, mount the measuring tool on the tripod **(32)**. Always work with the shock-warning function activated in order to avoid faulty measurements in case of ground movements or shocks to the measuring tool.

Overview of the rotary laser indicators

	Laser beam	Rotation of the laser beam	  				
			Green	Red	Green	Red	Red
Switching on the measuring tool (1 s self-check)			●			●	●
Levelling in or re-levelling	2 ×/s	○	2 ×/s				
Measuring tool levelled in/ready for operation	●	●	●				
Self-levelling range exceeded	2 ×/s	○		●			
Shock-warning function activated					●		
Shock-warning actuated	2 ×/s	○				2 ×/s	
Battery voltage for ≤ 2 h operation							2 ×/s
Batteries drained	○	○					●

●: Continuous operation

2 ×/s: Flashing frequency (e.g. twice per second)

○: Function stopped

Maintenance and Service

Maintenance and Cleaning

Keep the measuring tool and the remote control clean at all times.

Do not immerse the measuring tool and remote control into water or other fluids.

Wipe off any dirt using a damp, soft cloth. Do not use any detergents or solvents.

In particular, regularly clean the surfaces at the outlet aperture of the laser on the measuring tool and make sure to check for any lint.

After-Sales Service and Application Service

Great Britain

Tel. Service: (0344) 7360109

GB Importer:

Robert Bosch Ltd.
Broadwater Park
North Orbital Road
Uxbridge
UB9 5HJ

Malaysia

Tel.: (03) 79663194

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

Disposal

Electrical and electronic equipment, accessories and packaging should be sorted for environmental friendly recycling.



Do not dispose of electrical and electronic equipment or batteries with household waste.

Only for EU countries and United Kingdom:

Electrical and electronic equipment or used batteries that are no longer suitable for use must be collected separately and disposed of in an environmentally friendly manner. Use the designated collection systems. Incorrect disposal may cause harmful effects on the environment and human health, due to the potential presence of hazardous substances.

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Contacts de Service
Contactos de Servicio



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