

**STABILA®** 

How true pro's measure

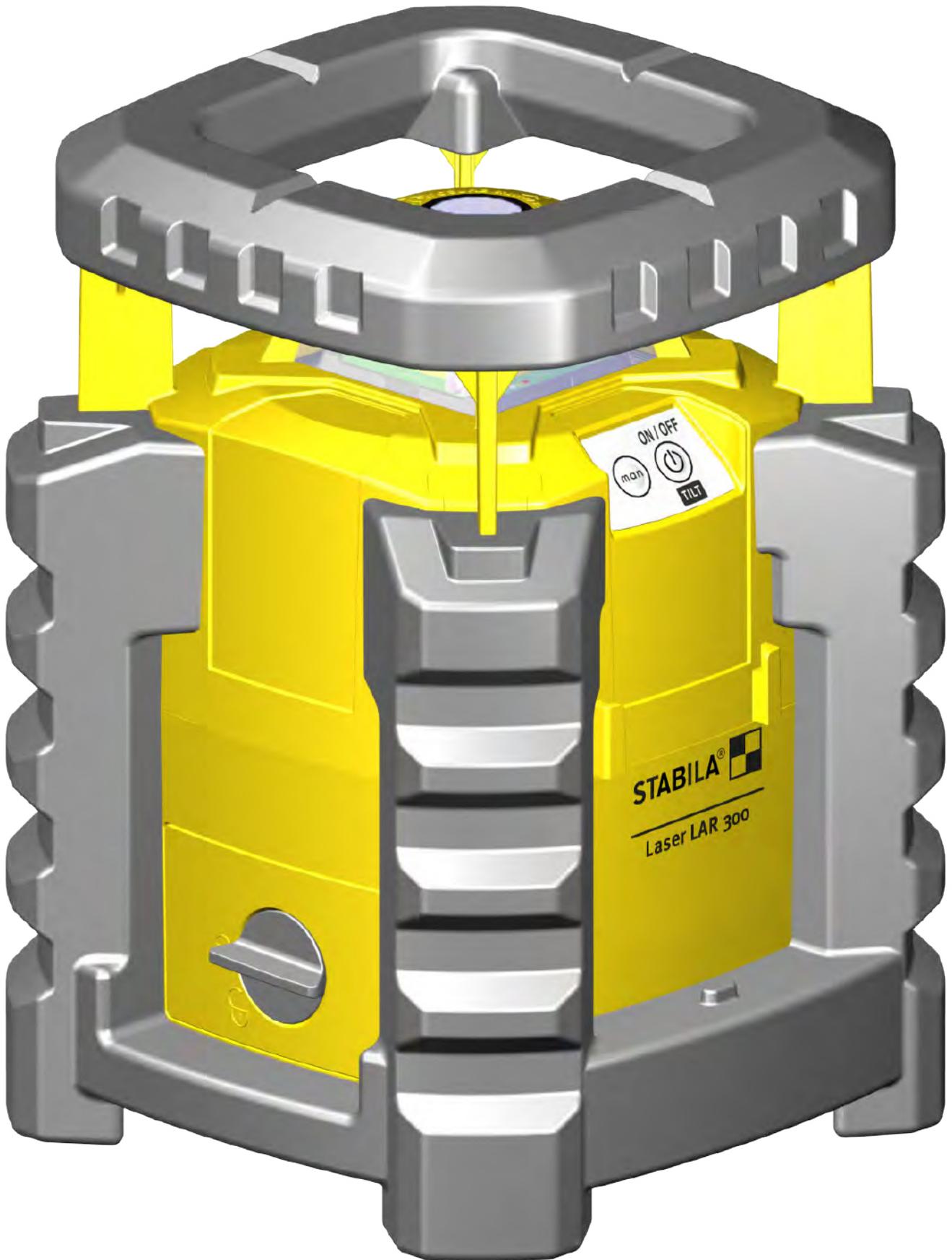
# LAR 300

Operating instructions



## Contents

Section	Page
• 1. Intended use	3
• 2. Safety instructions for laser units	4
• 3. Before first commissioning	4
• 4. Components of the unit	5
• 5. Battery insertion/replacement	6
• 6. Commissioning	7
• 7. Tilt function	8
• 8.1 Automatic operation with tilt function	9
• 8.2 Automatic operation with releveling	10
• 9.1 Manual operation with tilt function	11
• 9.2 Manual operation without tilt function	12
• 10. Functions	13
• 11. LED indicators	14
• 12.1 Checking accuracy	15
• 12.2 Horizontal check	15
• 13. Technical data	16



## 1. Intended use

The STABILA LAR 300 rotation laser is an easy-to-use rotation laser for horizontal levelling and establishing plumb lines. The LAR 300 has a sealed enclosure (IP 65) for use on building sites. It is self-levelling within a range of  $\pm 5^\circ$ .

The laser beam can be picked up using a receiver even where it can no longer be discerned with the naked eye.

If you still have questions after reading through the operating instructions, you can obtain advice by telephone:

## 2. Safety instructions for laser units



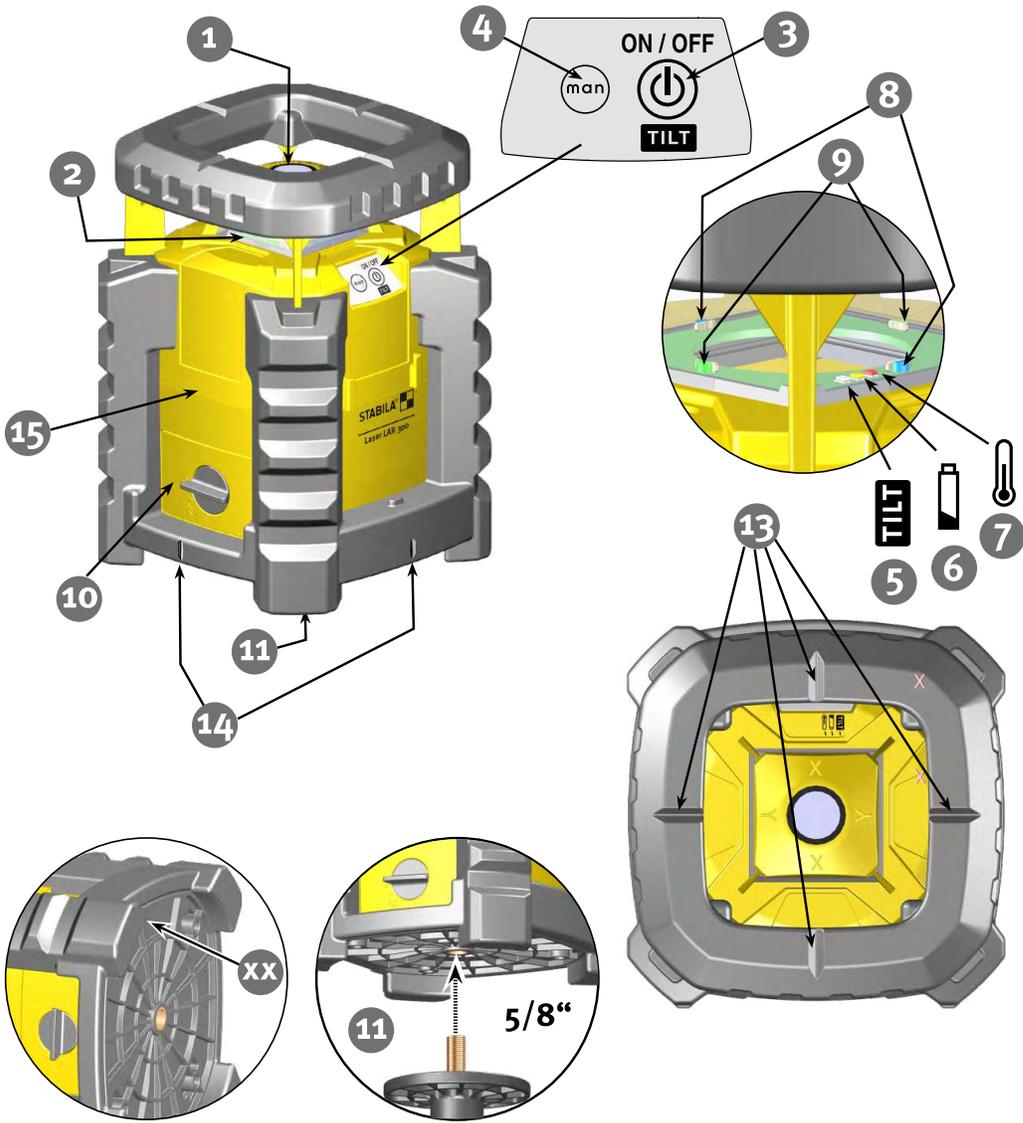
IEC 60825-1:2014

In Class 2 laser units, your eyes are usually protected from accidental, short-term exposure to the laser beam by the eyelid-closing reflex and/or the reflex reaction to turn one's head. If a laser beam hits your eye, deliberately close your eyes and move your head out of the path of the beam. Do not look into the direct or reflected beam. The STABILA laser goggles available for our laser units are not safety eyewear: their function is to improve the visibility of the laser beam.

- Do not aim the laser beam directly at people!
- Avoid dazzling other people with the unit!
- Keep the unit out of the reach of children!
- If operating or adjustment equipment that has not been specified here is used, or if the unit is not operated in the ways described here, this may result in hazardous exposure to radiation!

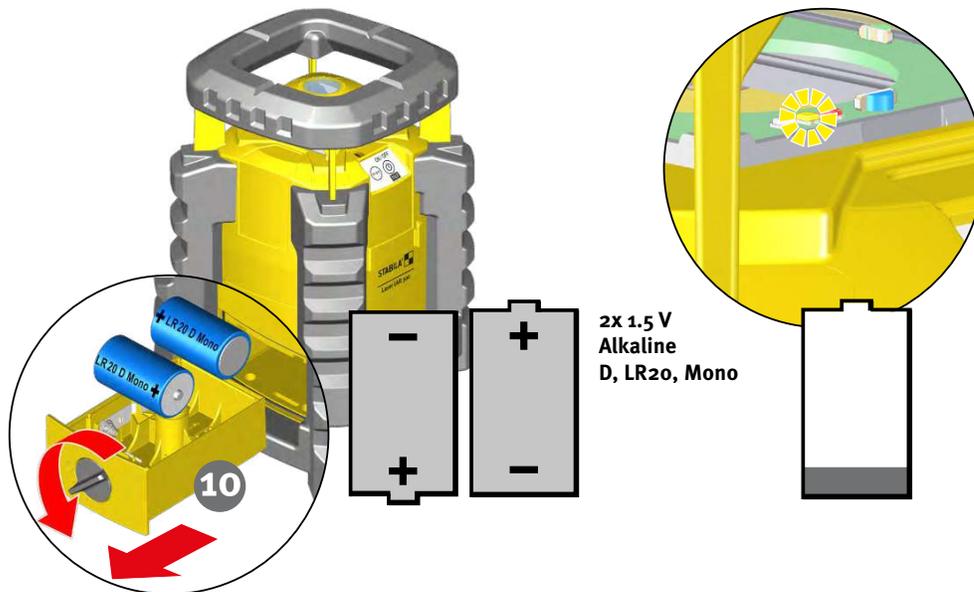
## 3. Before first commissioning

To insert batteries -> Battery replacement



**4. Components of the unit**

- 1. Exit window      Point laser/laser beam
- 2. Exit window      Rotation beam
- 3. Button:            ON/OFF/TILT
- 4. Button:            Manual mode ON/OFF
- 5. White LED:        Tilt function
- 6. Yellow LED:        Battery low
- 7. Red LED:          Overtemperature
- 8. Blue LED:         Laser x-axis/display TILT + Manual
- 9. Green LED:        Laser y-axis/display TILT + Manual
- 10. Battery compartment lid
- 11. 5/8" tripod socket
- 12. Retaining bracket
- 13. Locator markings
- 14. Plumb-line laser function marking points
- 15. Housing  
- IP 65 protected against water jets and dust  
xx Serial number



## 5. Battery insertion/replacement

Open the battery compartment lid (10) in the direction of the arrow and insert new batteries in the battery compartment as indicated by the symbol.

Suitable rechargeable batteries can also be used.

### LED indicator:

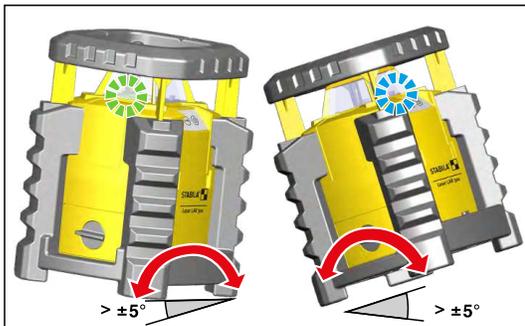
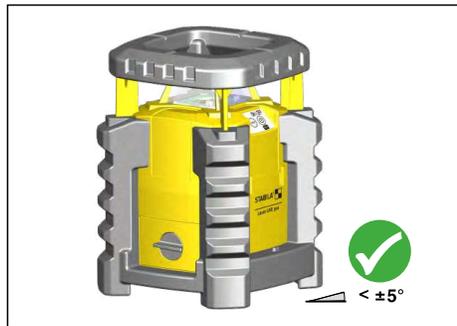
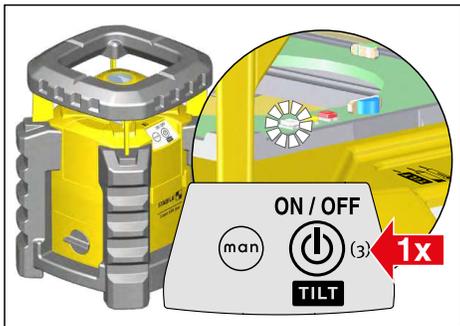
Yellow LED (6): Battery capacity low  
- Insert new battery



Used batteries should be disposed of at appropriate collection points.

Do not dispose of in household waste.

If you do not intend to use the unit for an extended period, remove the batteries.



## 6. Commissioning

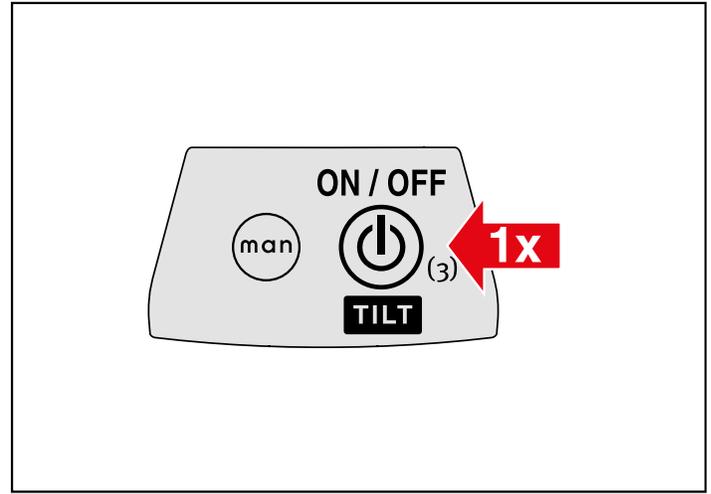
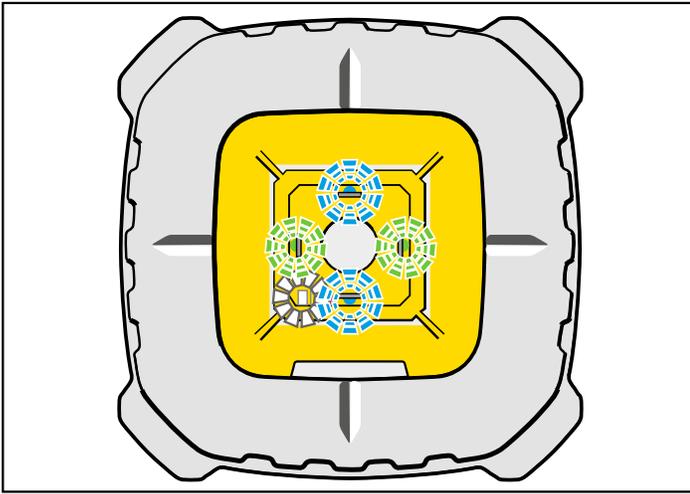
Place the laser unit in the working position. To switch on the laser, press button (3). Holding this button for a longer period will switch the laser off again.

Activating the self-levelling function causes the unit to level itself automatically. The laser beam does not (yet) flash or rotate. Once levelling is complete, the beam stays on constantly and begins to rotate.

Fine adjustments can still be made within the first 30 seconds. These 30 seconds are indicated by a slow flashing of the white LED (5).

If the unit is out of alignment by  $\geq 5^\circ$ , it is outside the self-levelling range and cannot level itself automatically. In this case the laser continues to flash.

The blue and green LEDs indicate which side of the laser unit is too high. Align the unit by hand until the LEDs go out.



## 7. Tilt function

The tilt function warns if any interference to the laser has occurred that may cause misalignment. This ensures that such interference does not go unnoticed.

The white LED (5) lights up steadily when the tilt function is active. If any event occurs that could result in the laser unit being deflected from its exact alignment and setting, the beam ceases to rotate and the blue (8) and green (9) LEDs flash. If this occurs, check the laser unit and set it up once again if necessary.

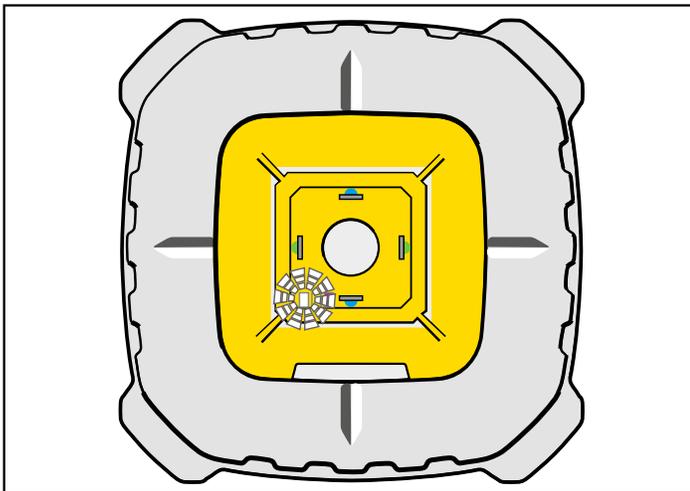
You must press button (3) to confirm the tilt function. Only after this can you proceed further.

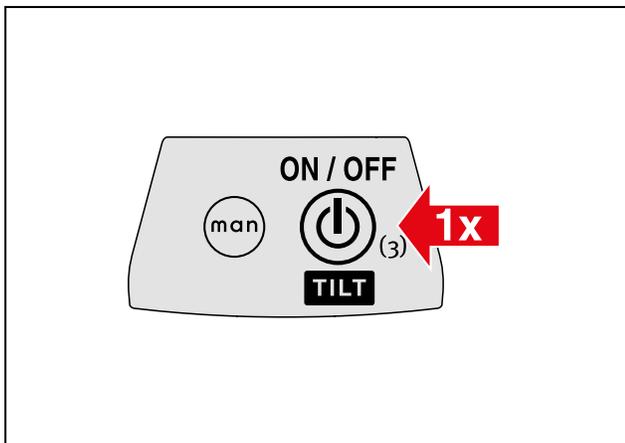
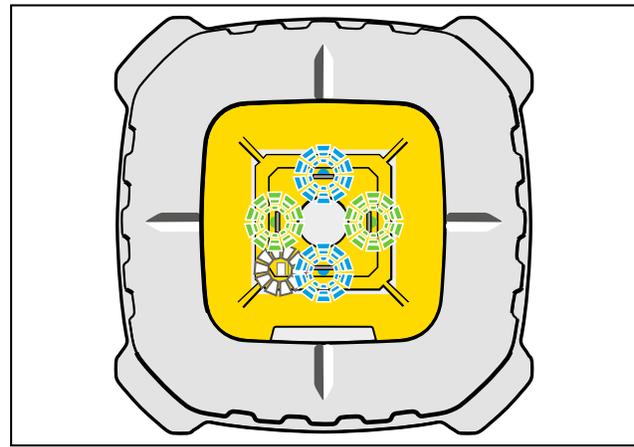
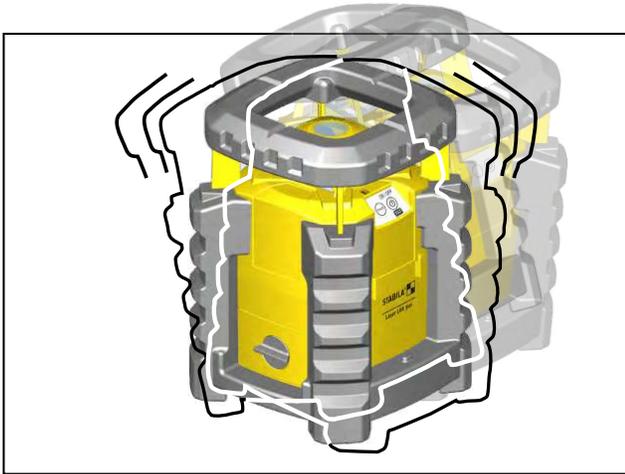
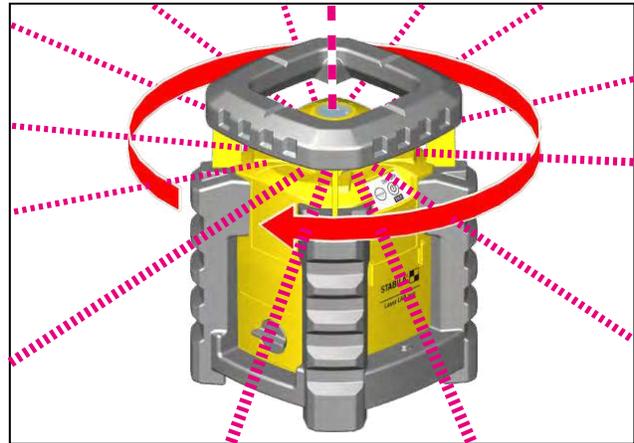
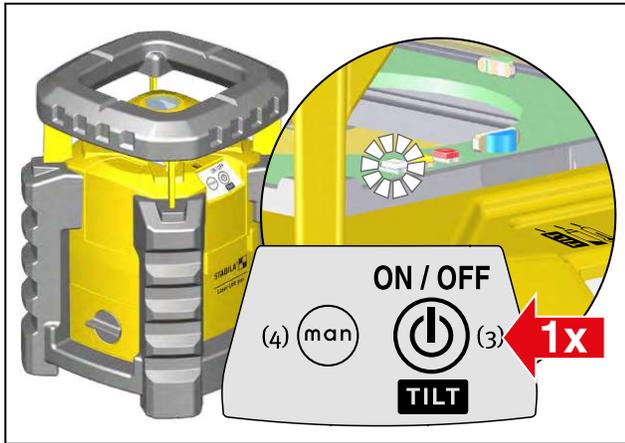
The tilt function can be switched on or off in any mode (touch button (3) briefly).

When the laser unit is switched on (button 3), tilt mode is always initially activated.

## Deactivated tilt function

If the tilt function is deactivated (white LED flashing), no warning is given of any change in the setting/alignment in the event of interference. In automatic operation, however, the unit re-levels itself automatically.





### 8.1 Automatic operation with tilt function

This mode is always set directly after the unit is switched on (button (3)). Other modes can be selected by pressing button (3) or button (4).

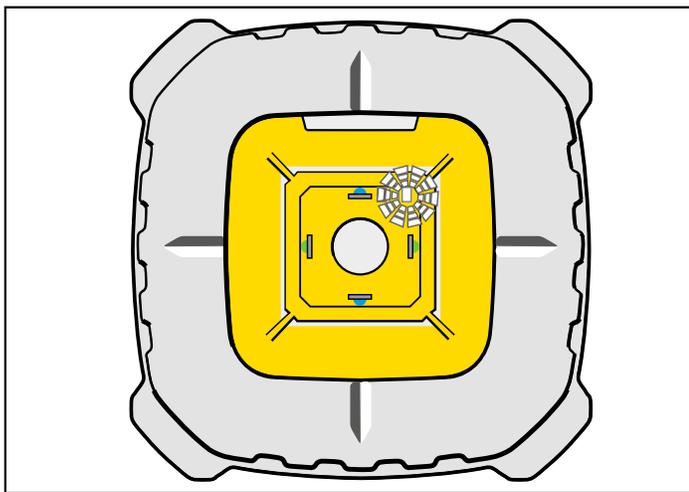
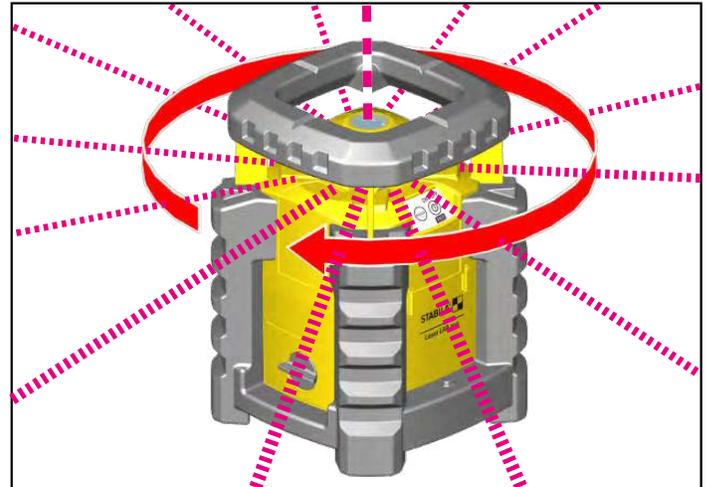
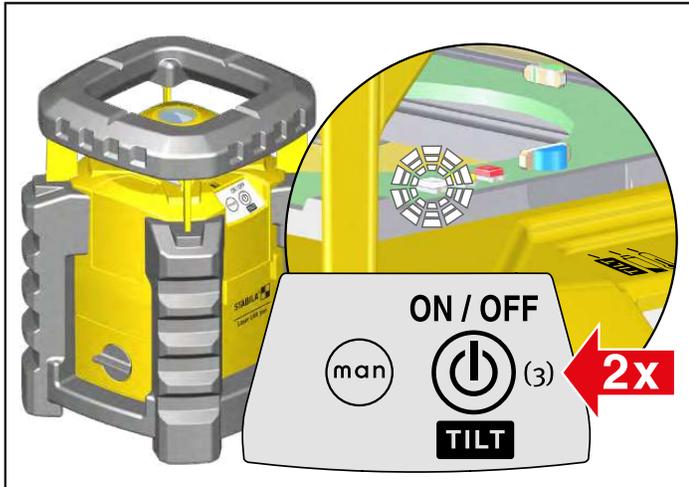
In “Automatic” operation, the laser unit levels itself automatically. Place the laser unit in the working position. To switch on, press button (3) once. The LAR 300 is in now in “Automatic operation with tilt function”.

The automatic levelling process begins. Once levelling is complete, the beam stays on constantly and begins to rotate. Fine adjustments can still be made within the first 30 seconds. These 30 seconds are indicated by a slow flashing of the white LED (5).

When the tilt function is active, the white LED (5) lights up steadily. If any event occurs that could result in the laser unit being deflected from its exact alignment and setting, the beam ceases to rotate and the blue (8) and green (9) LEDs flash. If this occurs, check the laser unit and set it up once again if necessary.

You must press button (3) to confirm the tilt function. Only after this can you proceed further.

If you are working in conditions where interference is present (e.g. on vibrating surfaces), it is recommended



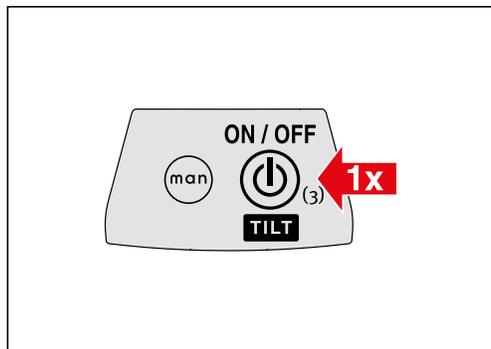
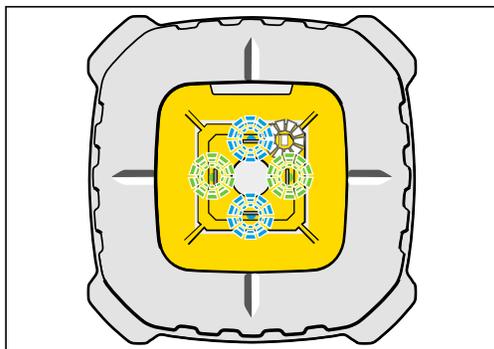
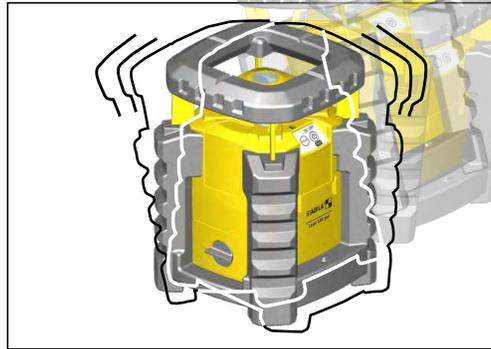
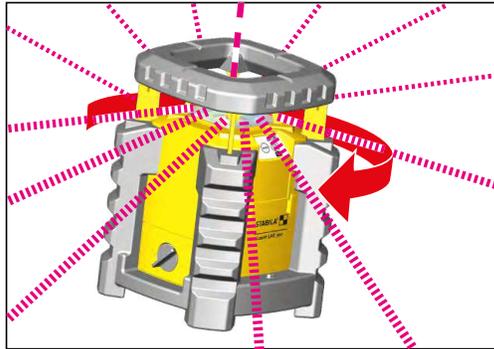
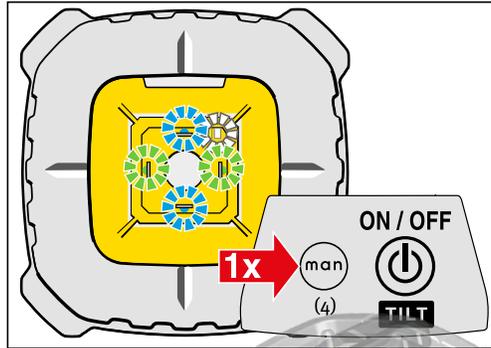
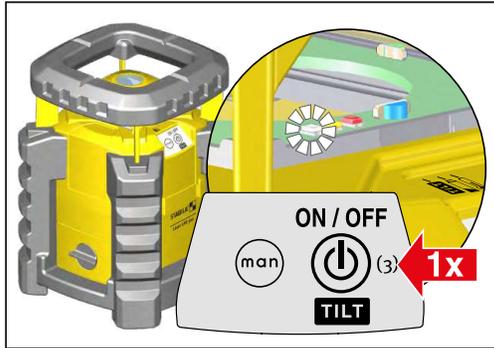
## 8.2 Automatic operation with releveling

In some working conditions (where shocks or vibrations affecting the surface occur, for example), the tilt function is disruptive.

With automatic releveling, on the other hand, the unit is readjusted each time it is knocked out of alignment.

Press button (3) twice = once to switch on + once to deactivate the tilt function. The white LED (5) flashes. The laser beam begins to rotate once the unit has levelled itself.

When incidents occur that cause misalignment, the laser beam ceases to rotate. The laser unit relevels itself. Once levelling is successfully complete, the laser beam starts to rotate again. If the laser unit is inclined at an angle of  $\geq 5^\circ$ , it is outside the self-levelling range and cannot level itself automatically. Any deviations from the original alignment / setting of the unit are not indicated (-> Tilt function).



### 9.1 Manual operation with tilt function

In manual operation, the laser plane is aligned by hand. Neither self-levelling nor relevelevelling is active. The unit does not level itself. If the tilt function is active, interference (shocks, vibrations) that could misalign the unit from its exact original setting do not go unnoticed.

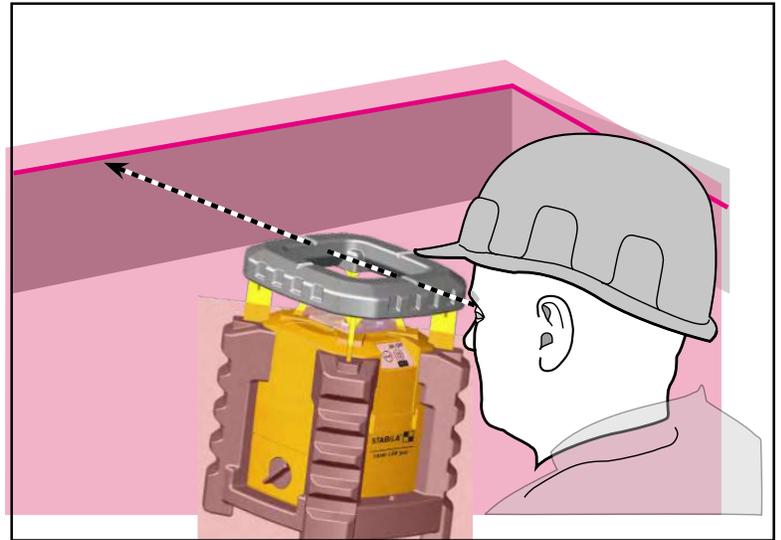
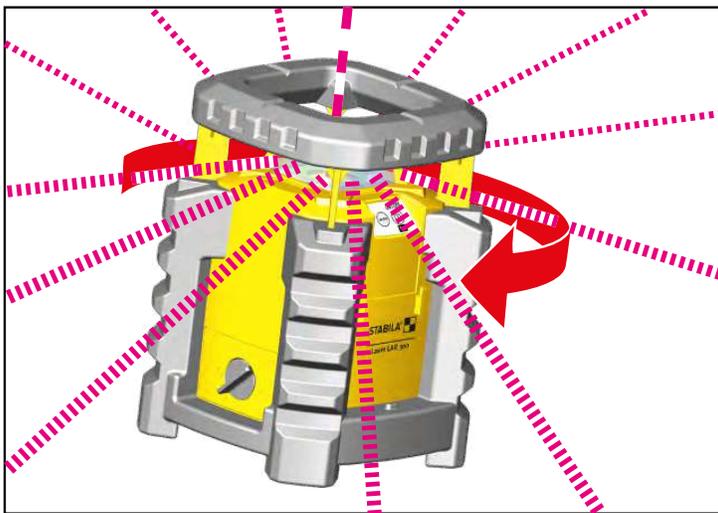
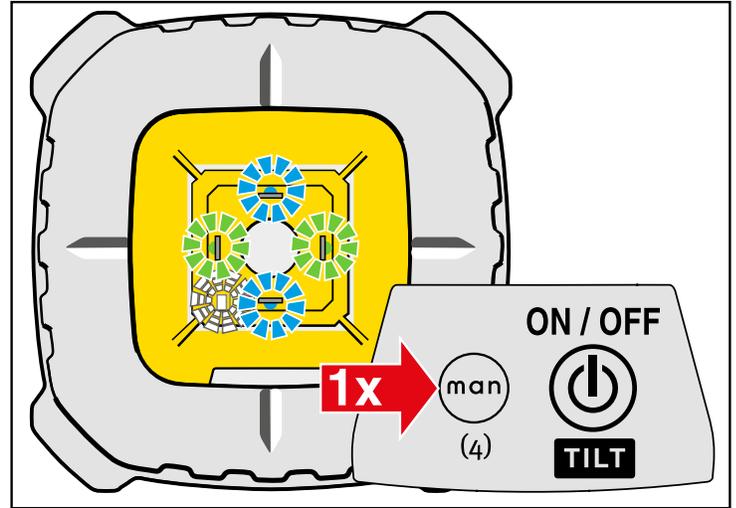
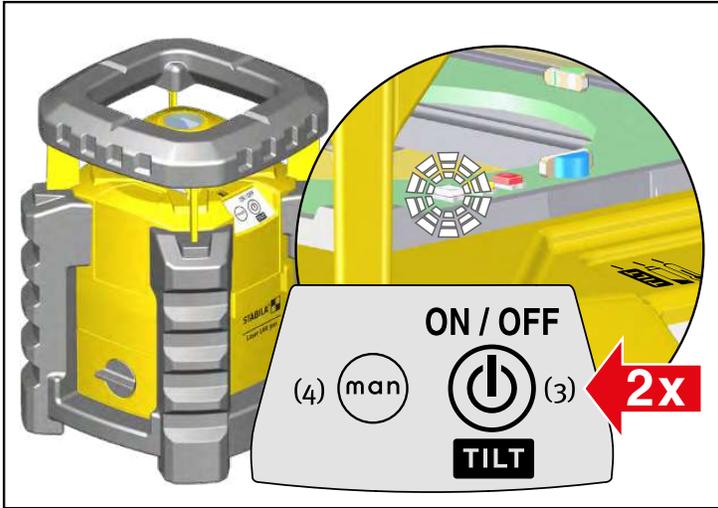
Place the laser unit in the working position. Press button (3) once = switch on in tilt mode. Press button (4) once = activate manual mode. The white LED (5) now lights up after flashing briefly. The blue (8) and green (9) LEDs light up steadily.

The laser beam rotates. Fine adjustments can still be made within the first 30 seconds. The laser plane can be set up by direction-finding or by taking measurements.

If any event occurs that could result in the laser unit being deflected from its exact alignment and setting, the beam ceases to rotate and the blue (8) and green (9) LEDs flash. If this occurs, check the laser unit and set it up once again if necessary.

The inclinometer (available as an accessory) can be used to aid setting up the inclination.

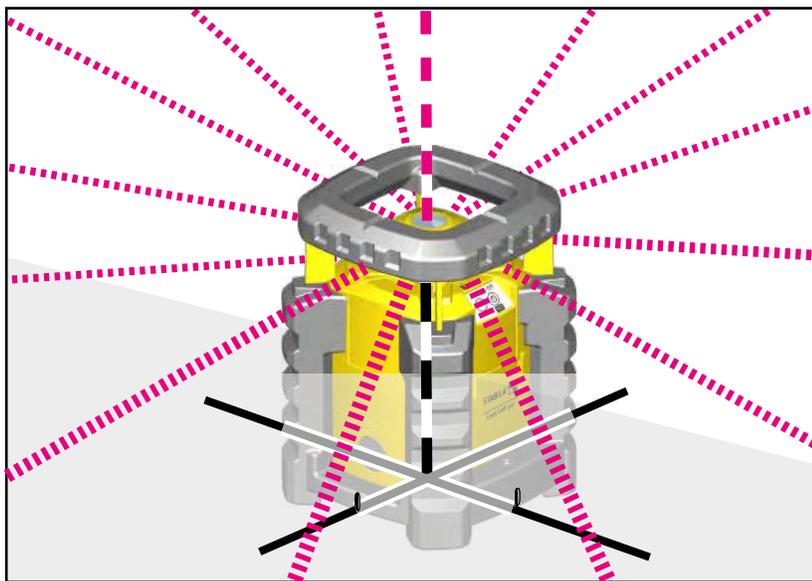
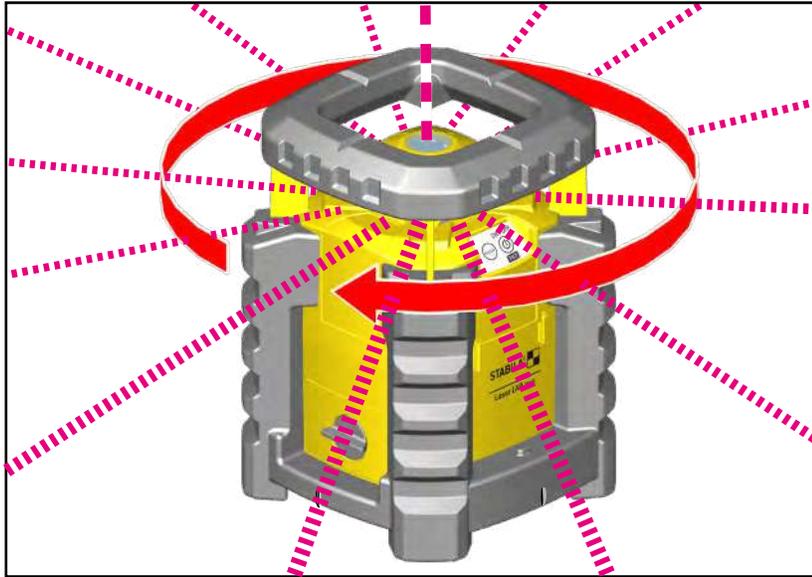
You must press button (3) to confirm the tilt function. Only after this can you proceed further.



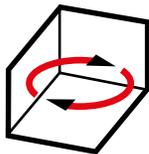
## 9.2 Manual operation without tilt function

In manual operation without tilt function, automatic mode, the tilt function and releveling are not active. The laser unit is aligned entirely by hand. The unit does not level itself.

Place the laser unit in the working position. Press button (3) twice = once to switch on + once to deactivate tilt function. Press button (4) once = change over to/activate manual mode. The white LED (5) flashes. The blue (8) and green (9) LEDs light up steadily. The laser beam rotates. The laser plane can be set up by direction-finding or by taking measurements.

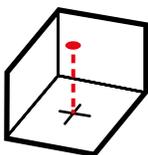


## 10. Functions



### Rotation function

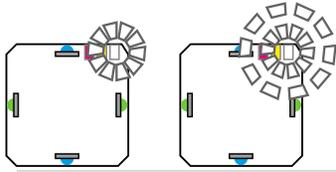
The laser beam rotates through 360° around its axis.  
Horizontal



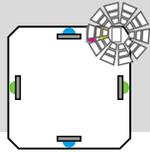
### Plumb-line function

Transfers a determined point from the floor to the ceiling.  
To transfer a plumb line from a floor marking to the ceiling, the laser unit is aligned exactly with the cross mark with the 4 marking points (14). The point of intersection of the cross mark corresponds to the exiting laser plumb line. It is only possible to achieve a correct result in automatic operation on a level surface.

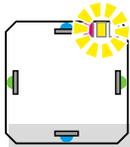
## 11. LED indicators



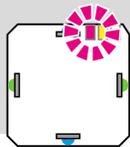
Operation with tilt function --> "Tilt function"  
30 seconds fine adjustment --> "Commissioning",  
"Tilt function"



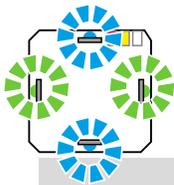
Operation without tilt function  
--> "Automatic operation with releveling"  
--> "Manual operation"



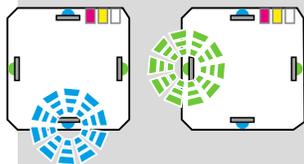
Battery capacity low  
--> "Battery insertion/replacement"



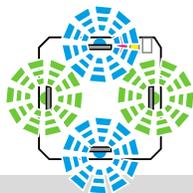
The temperature inside the unit is above 50 °C.  
To prevent overheating, the laser diode has been  
switched off



Operating in manual mode  
--> "Manual operation"  
--> "Manual operation with tilt function"



Unit is outside self-levelling range --> "Commis-  
sioning"



Tilt function initiated  
--> "Automatic operation with tilt function"  
--> "Manual operation with tilt function"



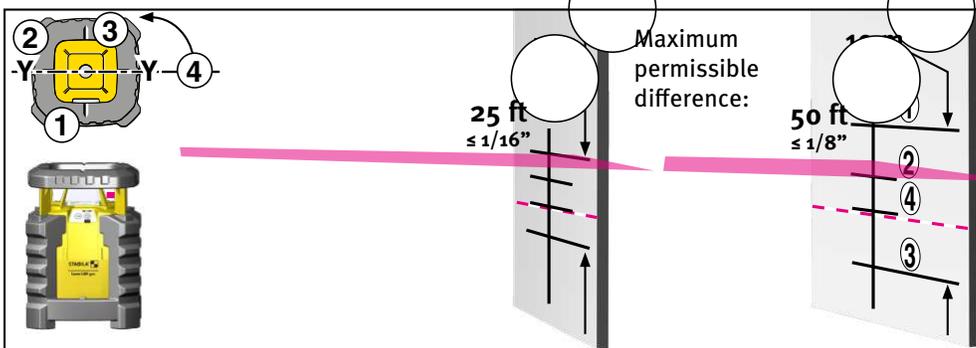
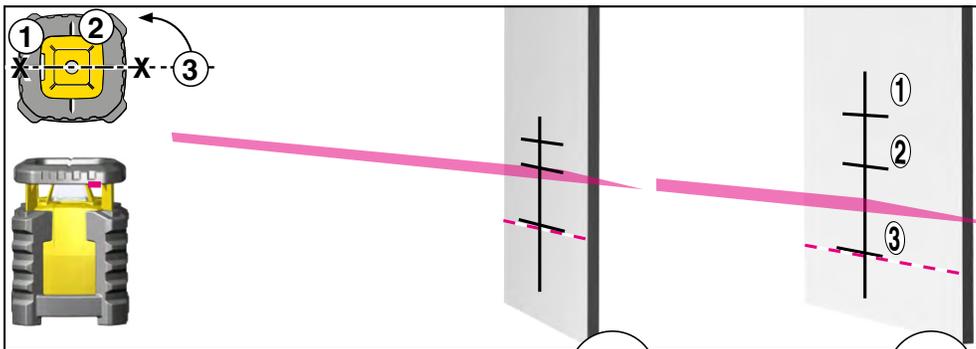
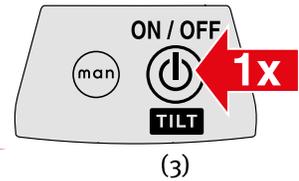
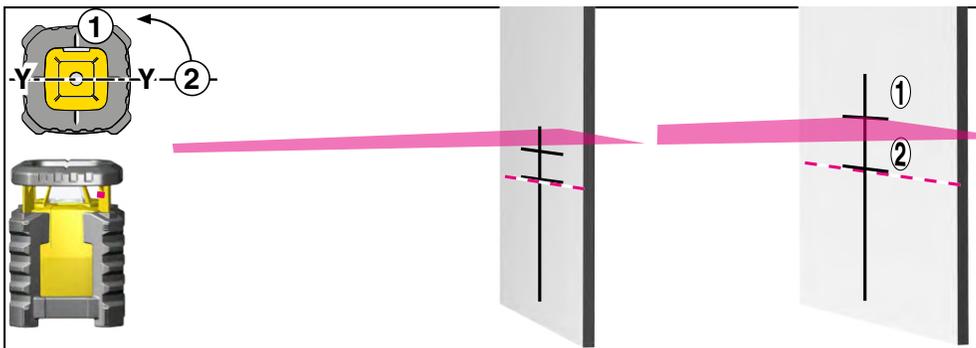
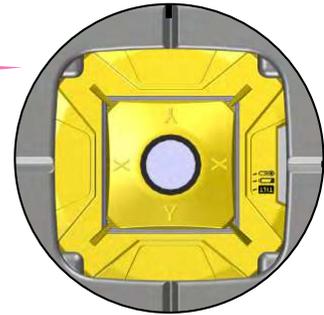
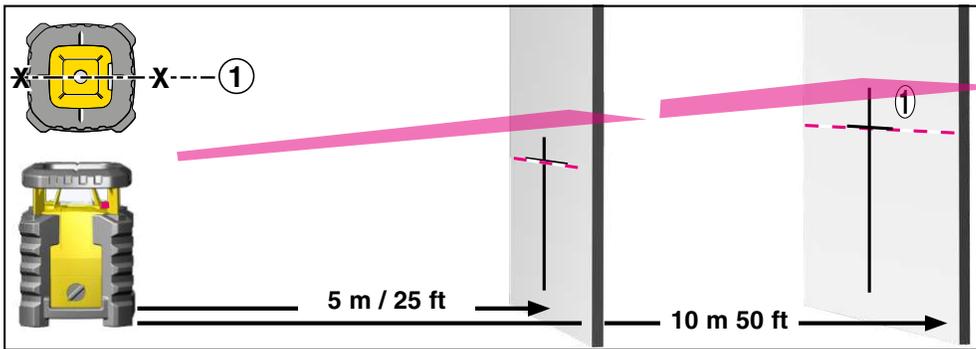
LED lights up steadily



LED flashes



LED flashes quickly



## 12.1 Checking accuracy

The LAR 300 rotation laser from STABILA is designed for use on building sites and is perfectly adjusted before leaving our premises. As with all precision instruments, you should regularly check the calibration accuracy of the unit. Always check the unit before you start work, especially if it has been exposed to heavy vibrations.

### Horizontal check

## 12.2 Horizontal check

### Checking the horizontal laser line level

Be sure to adhere as closely as possible to the orientation of the unit as shown.

1. Place the LAR 300 on a horizontal surface or on a tripod at a distance of 5 or 10 m (25 or 50 ft) from a wall, with the operator panel towards the wall.
2. Switch the laser unit on (button (3)) and wait until it has automatically levelled itself.
3. Mark the centre of the visible laser line on the wall – measurement 1 (point 1). A receiver can also be used.
4. Rotate the entire laser unit through 90° without altering the height of the laser (i.e. do not change the tripod height). Allow the unit to level itself again.
5. Mark the centre of the laser line on the wall (point 2).
6. Repeat steps 4 and 5 twice to obtain points 3 and 4.

If the differences between the four control points are less than 1 mm distance of 5 m (1/16" at 25 ft) or less than 2 mm for a distance of 10 m (1/8" at 50 ft), the unit is within its permitted tolerance of  $\pm 0.1$  mm/m ( $\pm 18$ " over 100ft). Here points 1 and 3 correspond to the unit's x-axis and points 2 and 4 to its y-axis.

### 13. Technical data

Laser type: Red diode laser, wavelength 635 nm  
Power output: < 1 mW, laser class 2 in accordance with IEC 60825-1:2014  
This product compl. with the appl. requ. of 21CFR, parts 1040.10 and 1040.11.  
Self-levelling range: approx.  $\pm 5^\circ$   
Levelling accuracy\*:  $\pm 0.1$  mm/m /  $\pm 1/8''$  over 50 ft  
Batteries: 2 x 1.5 V alkaline, size mono, D, LR20  
Battery life: approx. 80 hours (alkaline)  
Operating temperature range:  $-10^\circ\text{C}$  to  $+60^\circ\text{C}$  /  $14^\circ\text{F}$  to  $+140^\circ\text{F}$   
Storage temperature range:  $-20^\circ\text{C}$  to  $+70^\circ\text{C}$  /  $-4^\circ\text{F}$  to  $+158^\circ\text{F}$

Subject to technical modifications.

\* when operated within the specified temperature range