

## REGISTRATION CARD

### RL510 Rotating Laser

Product \_\_\_\_\_

Model Number \_\_\_\_\_

Serial Number \_\_\_\_\_

Purchased from \_\_\_\_\_

Invoice Number \_\_\_\_\_ Date \_\_\_\_\_

*Ramset* will repair or replace this product free of charge if it shall be found to be defective under normal use within a period of 12 months from the date of purchase due to faulty materials or workmanship.

Defects which are due to normal wear and tear, overload or misuse are not covered by this warranty.

To obtain the benefit of this warranty, the purchaser must sign and return the attached registration card to *Ramset* within 10 days of the date of purchase. Claims under the guarantee may be made by delivering the product undismantled to the seller from whom it was purchased or by making a claim to such a seller in writing, in either case within 7 days of the defect becoming apparent.

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RL510/3-08

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**RL510 Rotating Laser**

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### ***Technical Service***

700 High Grove Blvd.  
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techsupport@ramset.com  
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### ***Customer Service Locations***

700 High Grove Blvd.  
Glendale Heights, IL 60139  
**Phone: 800-241-5640**  
Fax: 866-726-8134  
8:00am–5:30pm (CST, M–F)

3405 Dallas Hwy, Suite 810  
Marietta, GA 30064  
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## **RAMSET RL510 Rotating Laser** Return this Registration Card to Ramset

Product: **Ramset RL510 Rotating Laser**

Model Number: **RL510**

Serial Number:

Purchased from:

ABN:

Invoice Number:

Date:

I agree that the terms set out in the Warranty shall apply to the sale and purchase of the product described above.

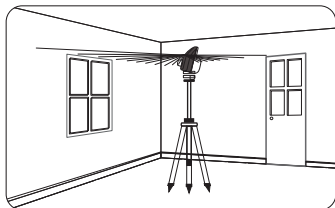
Purchaser's Name:

Address:

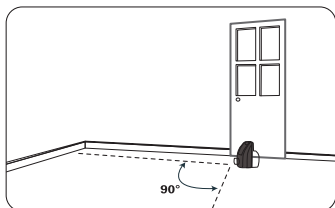
Signature:

ABN:

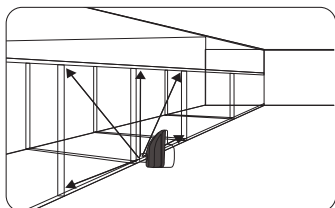
**A**



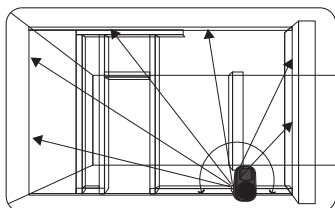
**B**



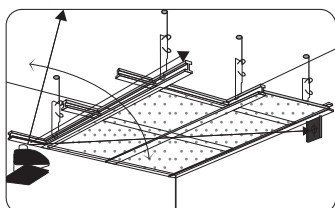
**C**























**D**



**E**



1) Turn on the RL510	Press  on the keypad. After laser is turned on it will automatically level then begin to rotate
2) Stop the rotation	Press on  if the head rotates counterclockwise Press on  if the head rotates clockwise
3) Move plane to the left	Press on 
4) Move plane to the right	Press on 
5) Start chalk line	Push or pull the clamp on the head
6) Start scanning	Press simultaneously on  and 
7) Increase scanning angle	Press on  when RL510 is on scanning mode
8) Decrease scanning angle	Press on  when RL510 is on scanning mode
9) Put the 'Tilt' on	Press on 
10) Put RL510 in manual mode (X axis)	Press on  (one LED will blink)
11) Put RL510 in manual mode (Y axis)	Press on  then  (two LEDs will blink)
12) Put RL510 in automatic on X and manual on Y axis	Press  for several seconds
13) Set a grade in manual mode	Press  or  to raise or lower the plane
14) Put RL510 in wall mount mode	Simultaneously press  and  for several seconds. When the wall mount mode will be activated, 3 LEDs will blink
15) Raise the RL510 in wall mount mode	Press 
16) Lower the RL510 in wall mount mode	Press 

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Although the RL510 is very simple to use, we recommend that you read this manual before operating the laser.

### 1. GENERAL INFORMATION

#### 1.1 Description

The RL510 is an automatic visible laser that can be used for leveling, vertical alignment, plumbing and squaring. Applications include installing suspended ceilings, technical floorings, partitions, and a variety of outdoor alignment tasks.

The RL510 laser has these advanced features:

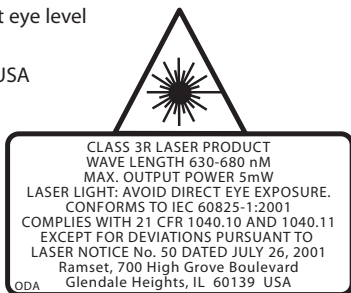
- Automatic self-leveling in both horizontal and vertical modes
- Motorized mount speeds setup for ceilings and partitions
- Manual leveling in X and Y axes for dual slope setting ( $\pm 10\%$ )
- Semi-automatic single axis slope setting (automatic leveling in X and manual leveling in Y)
- Ability to match slope for inclined planes greater than 10%
- Choice of beams, including scanning and chalk line
- Square shot that's left and right adjustable
- Easy electronic calibration

#### 1.2 Safety

The RL510 is a Class 3R laser, manufactured to comply with the international rules of safety IEC 60825-1, 2001. Although the power of the emission of the beam is less than 5mW in Class 3R, the following cautions are recommended:

- Do not stare directly at the beam
- Do not set up the laser at eye level

#### A. CDRH warning label for USA

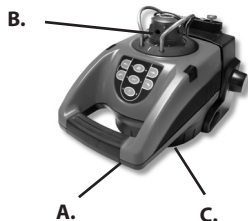


### B. Aperture label

AVOID EXPOSURE. LASER LIGHT IS EMITTED FROM THIS APERTURE

### C. Serial no. tag

Ramset  
Model  
P/N  
700 High Grove Blvd.  
Glendale Heights, IL 60139



## 1.3 Specifications

Recommended Use:	1,000 ft. (300 m) diameter
Leveling Accuracy:	± 1/8" at 100 ft. (± 0.010%; ± 10 mm at 100 m)
Self-leveling:	Horizontal and Vertical
Leveling Range:	± 10%
Rotation Speed:	0, 90, 150, 300, 450, 600 rpm
Scanning Angle:	Variable, from 2 to 36°
Laser Diode:	Visible 635 nm; <5mW Class 3R
Power:	2 D size (LR20) alkaline batteries or rechargeable batteries
Battery Life:	160 hours with alkaline batteries, 40 hours with rechargeable batteries
Charging Time:	15 hours
Remote Detection:	100 ft. (30 m) / 180°
Environmental:	Weatherproof (rain and dust proof – IP64)
Weight:	With Motorized Mount 5.00 lbs. (2.3 kg) Without Motorized Mount: 3.56 lbs. (1.6 kg)
Size:	With Motorized Mount: 10.2" x 7.2" x 7.0" (25.9 x 18.3 x 17.8 cm) Without Motorized Mount: 8.0" x 5.8" x 7.0" (20.3 x 14.7 x 17.8 cm)

### 1.4 Laser Overview

See the following page for photos of the laser and keypad corresponding to these callouts. See separate descriptions of motorized mount, remote control, and detector.

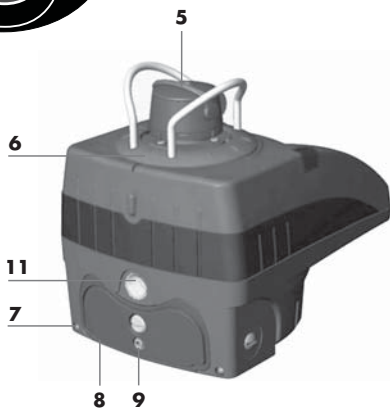
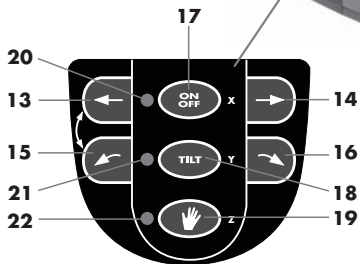
1. Rotating head
2. Head protection
3. Plumb or square laser beam aperture
4. Rotating laser beam aperture
5. Collar to switch between point & chalk line
6. Index marks for alignment and 90°
7. Feet for vertical plane
8. Batteries
9. Jack for battery charger
10. 5/8 – 11 tripod mount for horizontal set-up
11. 5/8 – 11 tripod mount for vertical set-up
12. Sensors for remote control signal

### 1.5 Keypad Overview

13. Vertical alignment left / Increase scanning angle / *Move calibration beam up*
14. Vertical alignment right / Decrease scanning angle / *Move calibration beam down*
15. Rotation left / Speed control / Move scanning left / *Save calibration*
16. Rotation right / Speed control / Move scanning right / *Change calibration axis*
17. On / Off
18. Tilt (H.I. Alert)
19. Automatic / Manual Mode
20. Low battery LED indicator / *X axis calibration LED*
21. Tilt (H.I. Alert) LED indicator / *Y axis calibration LED*
22. Manual mode LED indicator / *Z axis calibration LED*

*Italics indicate keys and LEDs used in calibration mode.*





## 2. HOW TO USE THE RL510 LASER

### 2.1 Setup

The motorized wall mount can be removed from the laser if you wish to work without this attachment.

- Horizontal

The laser can be mounted on a 5/8 – 11 tripod (10) or placed directly on a solid, stable surface. It can also be suspended from a ceiling grid using the wall mount (see later section).

- Vertical

The laser can be mounted on a 5/8 – 11 tripod (11) or placed directly on its back (opposite the handle) on a solid, stable surface. For more stability, we recommend you to use the motorized mount. Use the support plate for stability when in vertical mode. When in vertical mode without the motorized mount, adjust the feet screws for more stability.

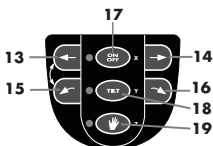
The RL510 has a wide self-leveling range; however, if the laser is set up out of the leveling range, the laser beam will continue to blink and rotation will not start.

- Turning on the laser

Turn on the laser with the On/Off key (17). It does a self-test and the beam blinks while the laser is self-leveling. After it's leveled, the head rotates. You can choose Tilt (H.I. Alert) mode or change to manual mode (see below).

### 2.2 Automatic / Manual Modes

The RL510 is in automatic self-leveling mode when turned on. Once the instrument has self-leveled, the laser head will start rotating.

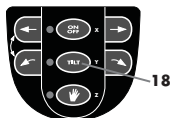


In manual mode (19), the laser does not self-level: this means that the beam will rotate even if the laser is not leveled. It can therefore be used on inclined planes such as stairs, roofs, or when manual grade setting is required. See later section on setting slope in manual or semi-automatic modes.

### 2.3 Tilt (H.I. Alert) Mode

The Tilt or H.I. (height of the instrument) Alert feature stops the laser automatically and sounds an alarm if the laser is disturbed, preventing inaccurate readings. It functions only when selected.

To activate this safeguard feature, press the Tilt key (18) after turning the laser on. The LED (21) will blink rapidly while the laser is self-leveling.



About 30 seconds after the head starts to rotate, the LED will blink slowly, indicating the Tilt mode is activated.

If the laser is disturbed while in Tilt mode, the head will stop rotating, the beam will turn off, the LED indicator will be on continuously, and an alarm will sound for 30 seconds.

Turn the laser off and turn it on again. Check to see if the beam elevation has changed from its original benchmark position.

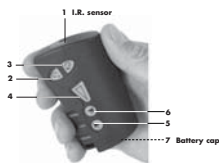
The laser is no longer in Tilt mode. Press Tilt (18) to return to Tilt mode.

This feature is only available in automatic and semi-automatic modes, and not in wall mount mode.

## 2.4 Remote Control

The remote control stops, starts or changes direction of the laser rotation and moves the square shot left and right. It also controls scanning and calibration. It can be used in the wall mount mode to move the laser and wall mount up or down on a ceiling grid or back or forth on the ground.

To open the battery compartment and change the battery, push the battery cap in the direction of the arrow.

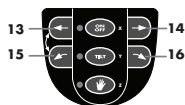


Key	Automatic Mode	Manual Mode
2	Speed control left	Speed control left
3	Speed control right	Speed control right
4	Scanning On/Off	Scanning On/Off
4 several seconds	Turn on wall mount mode	Turn on wall mount mode
5	Point by point left when rotation is Off. <i>Move the laser down on wall mount</i>	Set a positive slope <i>Move the laser down on wall mount</i>
6	Point by point right when rotation is Off <i>Move the laser up on wall mount</i>	Set a negative slope <i>Move the laser up on wall mount</i>

### 2.5 Rotation

The head rotates at 6 speeds: 0, 90, 150, 300, 450, and 600 rpm. 600 rpm is the default setting. The laser beam is more visible at slower rotation speeds.

If the laser head is rotating clockwise, press key (16) to decrease speed or press key (15) to stop rotation; if the laser head is rotating counterclockwise, press key (15) to decrease speed or press key (16) to stop rotation.



When the beam has stopped rotating, the point can be moved to the right or left using keys (13) and (14). You can also move the head manually to position the beam point. To start rotation again in the clockwise direction, press key (16). To start rotation again in the counterclockwise direction, press key (15).

### 2.6 Using the Laser Chalk Line

Ideal for short distance applications, the chalk line feature gives a precise and stable laser line for working directly on your reference plane.



To use the laser line, stop the rotation and flip up the collar located on the side of the rotating head (5). This collar switches between point and line modes.

You can move the stationary chalk line left by pressing key (13), and right by pressing key (14). You can also move the head manually or use the remote control.



***If the laser is in chalk line mode, the detector will not work. Switch to rotating point mode to detect the beam.***

### 2.7 Scanning

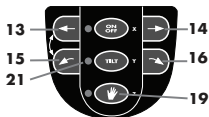
For interior applications, scanning mode allows you to see the beam easier at a distance.



***If the laser is in chalk line mode, switch to beam point mode before scanning.***

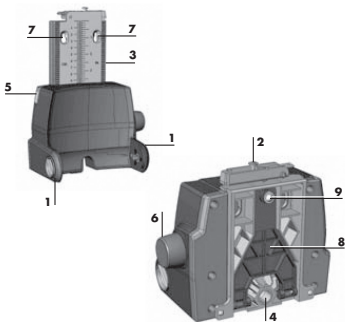
1. To scan, simultaneously press keys (13) and (15) on the laser keypad or press the scanning symbol on the remote control.

- The beam will blink until the laser has self-leveled.
- To decrease the scan length, press key (14) on the laser keypad; to increase the scan length, press key (13). Keys on the remote control can also be used for the scan functions.
- To move the scan to the left, press key (15) on the laser keypad; to move the scan to the right, press key (16).
- To stop scanning, again press simultaneously on keys (13) and (15).



### 2.8 Motorized Mount

- Attachment clamps for laser and mount
- Clamp for ceiling grid
- Adjustable plate
- 5/8 – 11 tripod mount (vertical setup)
- Release for adjustable plate
- Moves laser manually on mount
- Holes for attaching mount to wall
- Adjustable support for wall or ground stability
- Screw to adjust support



#### 2.8.1 Motorized Mount Overview

The motorized mount can be used to move the laser up or down on a ceiling grid. It can also be used when installing walls and partitions by moving the laser back and forth for vertical alignment. To move the mount manually, use (6).

**Caution:** Be careful when you are in wall mount mode not to press (13) or (14) keys unless you intend to move the laser.

**Maximum movement:** When the beam is at 0 on the adjustable plate, the laser can be raised a maximum of 2" (50 mm) and lowered 2.25" (60 mm).

**Wait until self-leveled:** While the laser is moving on the mount, it does not self-level and the beam continues to rotate. After moving the laser, wait a few seconds in case it needs to self-level. Check that it's still on the point or level desired, and make adjustments if needed.

**Automatic exit from mode:** If you have not activated the wall mount for five minutes, the laser will automatically exit from wall mount mode and return to the previous mode (3 LEDs will be off and a beep will sound).

**Functions not available:** Tilt (H.I. Alert) mode, setting slope in manual mode, or moving the scan or plumb point are not available in wall mount mode. Exit wall mount mode to use these functions.

**Detaching the mount:** Screw both knobs (1) all the way out to detach the mount from the laser.

**Troubleshooting:** If the laser does not move on the mount, check that the knobs (1) are tight enough to make power contact for the motor. The mount can also be detached to check that the contacts where the laser and mount are fastened are clean.

### 2.8.2 Using the Laser Wall Mount on a Ceiling Grid

*Setup:*

1. Check that the laser and mount are connected securely. The knobs (1) should be turned fairly tight to make contact for the motor, although do not overtighten.
2. Flip down the support plate (8).
3. Release the clamp (2) on top of the adjustable plate (3).
4. Lock the clamp against the ceiling grid. The grid should not exceed 1/8" (3 mm) in thickness.
5. If the foot on the support plate is not touching the wall, use the screw (9) to adjust.

*To move the laser up or down with the remote control:*

1. Turn on the laser and wait for it to self-level. The head must be rotating before you can enter wall mount mode.
2. Press the scanning key (4) on the remote control and hold it for several seconds until the 3 LEDs blink on the RL510 keypad.

3. Press key (6) on the remote control to move the laser up; press key (5) on the remote control to move the laser down. Holding the key will result in fast movement; short clicks will move the laser more precisely.

If you don't raise or lower the wall mount for 5 minutes, the laser will go back to its previous mode.

### 2.8.3 Using the Motorized Mount and Laser on the Floor

1. Check that the laser and mount are connected securely. The knobs (1) should be turned fairly tight to make contact for the motor, although do not overtighten.
2. Flip down the support plate (8) and place the laser in vertical mode on the floor.
3. If the support plate is not level, use the screw (9) to adjust.
4. Press the scanning key (4) on the remote control and hold it for several seconds until the 3 LEDs blink on the RL510 keypad.
5. Press keys (5) and (6) on the remote control to move the laser back and forth. Holding the key will result in faster movement; short clicks will move the laser more precisely.

If you don't move the wall mount for 5 minutes, the laser will go back to its previous mode.

## 2.9 Squaring

After placing the laser in the vertical position, the plumb beam out the top of the head can be moved to the left or right. This is necessary to do squaring for installing walls and partitions.

It is not necessary to use the motorized mount during squaring. However, it is recommended to use the motorized mount and support plate for more stability.

*To position the rotating plane perpendicular to a reference line:*

1. Place the laser on the ground so that the index notch on top of the adjustable plate is over your reference point.
2. Turn on the laser. After the laser has self-leveled, stop the head rotation using the remote control. Turn the head down so that the beam is on the adjustable plate.

3. Hold the scan key for several seconds to put the laser in wall mount mode. Use keys (5) and (6) on the remote control to adjust the laser so that the beam is on the reference point.
4. Exit from wall mount mode using the scan key. Align the beam projecting from the top of the head to your second reference point using keys (5) and (6) on the remote control. This beam is 90° or square to the other vertical plane beam.
5. Start rotation of the head using keys (2) or (3) on the remote control.



***It is very important to check while you are using the laser that it has not been moved and that your setting is still accurate.***

### 2.10 Manual Slope

The RL510 can be used to set a manual slope on both X and Y axes.

*Two modes are available:*

- Complete manual mode: X and Y axis will be both manual
- Semi-automatic mode: X in automatic / Y in manual

For slopes up to 10%, set up the laser in vertical mode and use the remote to set the slope following the instructions below.

For slopes greater than 10%, set up the laser in vertical mode and use the inclined plane feature (section 2.10.3).

#### 2.10.1 Manual Mode

1. After turning the laser on and allowing it to self-level, press the Manual key (19). The LED next to it (22) will blink, indicating you are in manual mode and you can set slope in the X axis. The head will continue to rotate.
2. Turn the laser so that the X index mark on top of the laser housing faces the direction of the slope (and X' faces away).
3. Press (13) on the laser keypad or (6) on the remote control to set a positive slope in X; press (14) on the laser keypad or (5) on the remote control to set a negative slope.
4. To switch to the Y axis, press the Tilt key (18). Both LEDs (21) and (22) will blink, indicating you're in manual mode and can set slope in the Y axis.



5. Turn the laser so that the Y index mark on top of the laser housing faces the direction of the slope (and Y' faces away).
6. Press (13) on the laser keypad or (6) on the remote control to set a positive slope in Y; press (14) on the laser keypad or (5) on the remote control to set a negative slope.

Press the Manual key (19) to return to the automatic mode.

### 2.10.2 Semi-Automatic Mode

1. After turning the laser on, hold the Manual key (19) for a few seconds. The LED next to it (22) will be on continually. The laser is in automatic self-leveling mode in X axis, and manual mode in Y axis.
2. You can use the Tilt (H.I. Alert) mode (18) safeguard function on the X axis while Y is on manual.
3. Press (13) on the laser keypad or (6) on the remote control to set a positive slope in Y; press (14) on the laser keypad or (5) on the remote control to set a negative slope. The X axis will stay level.

Press twice on the Manual key (19) to return to the automatic mode.



***In manual mode, the head will rotate even if the laser is not leveled. The Tilt function is not available when your laser is in manual mode.***

### 2.10.3 Inclined Plane

The laser can also be tilted, for manual slope, at various angles on the wall mount. A tripod with rotating mounting plate will speed setup.

1. Set the laser in vertical mode, preferably on a tripod. If setting on the ground, flip down the support plate for stability.
2. After the laser has self-leveled, set in manual or semi-automatic mode.
3. Loosen the knobs on either side (1) to partially separate the mount from the laser.
4. Move the laser to the approximate inclined position and tighten slightly.
5. Move to the final position and tighten further.

### 3. POWER

When battery power is low, the laser head will stop rotating and low battery LED next to the On/Off key will stay on.

#### 3.1 Installing Alkaline Batteries

1. To access the battery compartment, loosen the knobs connecting the laser to the wall mount.
2. Use a coin or a screwdriver to remove the cover of the battery compartment at the back of the laser.
3. Insert two alkaline batteries (D size or LR20), following the polarities indicated inside of the battery cover. (The + contact is rounded and raised). When replacing the batteries, change both at the same time.
4. Replace the compartment and tighten with a coin or screwdriver.

#### 3.2 Using Rechargeable Batteries


 ***You must charge the rechargeable battery for 15 hours before first using the laser.***

1. Insert the charger plug into the jack located at the back of the laser, under the wall mount.
2. Plug the charger into an electrical outlet (110 volts).
3. Charge for 15 hours.

#### 3.3 Later Recharging

The laser can be charged when working if electricity is available on the jobsite. Simply plug in the charger and continue working. You can also remove the battery pack to charge it, and replace it with the alkaline battery compartment to continue working. For optimum battery life, it is recommended to charge the battery after it has been fully discharged. To assure battery life, do not charge over 20 hours. The battery and the charger can be damaged if damp. Always store and charge your laser in a dry and covered place.

## 4. CHECKING AND CALIBRATING YOUR RL510

 **This chapter is very important.** Here are a few simple instructions to check your RL510 for calibration. Remember that the laser is a precision instrument and that it is important that you keep it calibrated and in proper condition.

The accuracy of your job is completely your responsibility and you should regularly check your instrument, especially prior to important jobs.

The laser has 3 axes: X and Y (horizontal) and Z (vertical), as indicated on top of the laser housing.

Each end of each axis must be checked for calibration. If needed, the axis can be calibrated, carefully following the instructions. You can also take the laser to a service center for calibration.

### **Check and calibrate in this order:**

Check both sides of X axis.

- If X is within spec, proceed to check both sides of Y
- If X needs calibration, calibrate X

Check both sides of Y axis.

- If Y is within spec, proceed to final X to Y check
- If Y needs calibration, calibrate Y; proceed to X to Y check

Final X to Y check: compare X, X', Y, Y'

Check Z and calibrate if necessary.

### **4.1 Calibration Overview**

Calibration is electronic, using the remote control or laser detector. The keypad of the laser may also be used, but it will take longer due to the laser making self-adjustments during movement.

If the beam is visible, calibrate using the non-rotating point. If it's too bright to see the beam, you'll use the laser detector and will need to have the beam rotating. When you're in calibration mode, press the scan key on the detector to rotate the beam.

The axis LED should blink slowly when in calibration mode. When the laser is self-leveling or making an adjustment, the LED will blink rapidly.

**⚠ When pressing an arrow key to move the beam for calibration, use short, rapid clicks. Do not hold the key down. One click will move the beam a very small amount (1/32" at 150' or 1 mm at 100 meters). After pressing the key, the LED will blink rapidly as the laser reacts. Wait until the LED returns to a slow blink to proceed.**

### 4.2 Checking X Axis

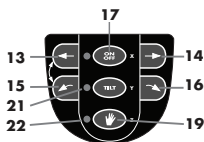
1. Place the laser on a flat surface or tripod 100 ft. (30 m) away from a wall. Position so that X (noted on top of laser housing) is facing the wall.
2. Turn on the laser. Once the laser has self-leveled, stop the rotation so that the beam is a point.
3. Mark the location of the laser point on the wall (X). If it's too bright to see the point, use a detector or put the laser in scan mode.
4. Rotate the laser 180° so that X' faces the wall.
5. Mark the location of the laser point (X') near the first mark so that both marks are in line, one above the other.
6. At 100 ft., the marks should be no more than 1/4" apart (at 30 m, no more than 6 mm apart). This is within the stated accuracy of  $\pm 1/8"$  at 100 ft. ( $\pm 0.010\%$ ).
7. If the marks are close enough, X axis is within calibration. The second axis (Y) must then be checked (see later section).

If the marks are not close enough, the X axis needs to be calibrated.

### 4.3 Calibrating X Axis

The laser must be calibrated to bring the beam to the center of the two X marks. Read "Calibration overview" before proceeding.

1. Turn off the laser (17).
2. While keeping the Manual key (19) pressed, turn on the laser (17).
3. After the 3 LEDs blink in sequence, the X LED will blink rapidly for a bit and then slowly, indicating it's ready to be calibrated in X axis. The beam will not be rotating.



If the X LED is blinking and the beam is rotating, it is not in calibration mode. Turn off and repeat the steps 1-3 again.

4. If you have not moved the laser, use the X marks made in previous steps of "Checking X axis". If you need a rotating beam for the detector, press the scan key.
5. Use the arrow keys to move the beam up or down to the halfway mark. If the X axis is toward the wall with the marks, use key (13) on the laser keypad or key (6) on the remote control to raise the beam; use key (14) on the laser keypad or key (5) on the remote control to lower the beam. (If X' faces the wall, the movement is the opposite).
6. After completing the X calibration, press key (16) on the laser keypad or key (3) on the remote control to change the axis and to calibrate the Y axis. When the LED blinks slowly, the laser is ready to be calibrated on the Y axis.
7. If the Y axis does not have to be calibrated, press key (15) on the laser keypad or key (2) on the remote control to save the calibration you have just made on X axis. The laser will shut off. If you are not sure of the calibration and do not wish to save it, turn the laser off with the On/Off key.

#### **4.4 Checking Y Axis**

1. Rotate the laser 90° so that Y is facing the wall.
2. Mark the location of the laser point on the wall.
3. Rotate the laser 180° so that Y' faces the wall.
4. Mark the location of the laser point near the first mark.
5. At 100 ft., the marks should be no more than  $\pm 1/4$ " apart (at 30 m, no more than 6 mm apart). This is within the stated accuracy of  $\pm 1/8$ " at 100 ft. ( $\pm 0.01\%$ ).
6. If the marks are close enough, Y axis is within calibration. Proceed to "Final X to Y Check". If the marks are not close enough, Y axis needs to be calibrated.

#### **4.5 Calibrating Y Axis**

The laser must be calibrated to bring the beam to the center of the two Y marks. Read "Calibration overview" before proceeding.

If you are still in calibration mode from the X axis, press key (16) on the laser keypad or key (3) on the remote control to change to the Y axis. When the Y LED (21) blinks slowly, it's ready to be calibrated in Y axis.

If you're no longer in calibration mode:

1. Turn off the laser.
2. While keeping the Manual key (19) pressed, turn on the laser (17).
3. After the 3 LEDs blink in sequence, the X LED will blink rapidly for a bit then slowly, indicating that it's ready to be calibrated. The beam will not be rotating.

If the X LED is blinking and the beam is rotating, it is not in calibration mode. Turn off and repeat the steps above.

4. Press key (16) on the laser keypad or key (3) on the remote control to change to the Y axis. Y LED (21) will blink rapidly for a bit and then slowly, indicating it's ready to be calibrated in Y axis.
5. If you have not moved the laser, use the Y marks made in previous steps of "Check Y axis".
6. Use the arrow keys to move the beam up or down to the halfway mark. If the Y axis is toward the wall with the marks, use key (13) on the laser keypad or key (6) on the remote control to raise the beam; use key (14) on the laser keypad or key (5) on the remote control to lower the beam.
7. After completing the Y calibration, press key (15) on the laser keypad or key (2) on the remote control to save the calibration you have just made on Y axis. The laser will shut off. If you are not sure of the calibration and do not wish to save it, turn the laser off with the On/Off key.

#### **4.6 Final X to Y Check**

As a final check of the horizontal axes, compare X and Y axes to be sure that your adjusted calibration is within the specs of  $\pm 1/8"$ . The marks for X, X', Y, and Y' should be no more than  $1/4"$  apart at 100 ft. (6 mm at 30 m). If X and Y are within spec, proceed to checking Z axis.

#### **4.7 Checking Z Axis**

1. Place the laser in vertical mode on a solid, stable surface about 20 ft. away from a plumb line (plumb bob or heavy object hanging on a string, at least 8 ft. high). You will be comparing the rotating beam to the plumb line. If you need to calibrate, the beam will be easier to see in a darkened room.

2. Use the support plate (8) for stability.
3. Turn on the laser.
4. Use either scan mode or rotation mode. Using the scanning beam is easier, but if you cannot see the beam, work in rotation mode with a detector.
5. Move the scan to the wall over the plumb line, sliding the laser left or right to line up the beam over the plumb line. If in rotation mode, use keys (13) or (14) on the laser keypad or keys (5) or (6) on the remote control to move the beam.
6. Move the scan up and down the entire length of the plumb line. If the beam is slanted, and not vertical like the plumb line, the Z axis needs to be calibrated.

#### **4.8 Calibrating Z Axis**

The laser must be calibrated to bring the rotating Z beam parallel to the plumb line.

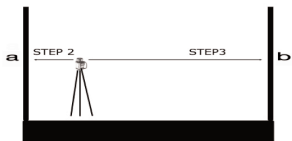
1. Turn off the laser (17).
2. While keeping the Manual key (19) pressed, turn on the laser (17).
3. After the 3 LEDs blink in sequence, the Z LED (22) will blink rapidly for a bit and then slowly, indicating it's ready to be calibrated in Z axis. The beam will not be rotating.

When it's in calibration mode, rotate the beam by pressing the scan key, and make these adjustments:

1. Use keys (13) and (14) on the laser keypad or keys (5) and (6) on the remote control until the beam is perfectly vertical and parallel to the plumb line.
2. Move the beam slightly so that the beam is over the plumb line for the final check.
3. After completing the Z calibration, press key (15) on the laser keypad or key (2) on the remote control to save it. The laser will shut off. If you are not sure of the calibration and do not wish to save it, turn the laser off with the On/Off key.

#### 4.9 Cone Error Checking

1. Set up the laser about 2 feet (60 cm) away from a wall (A) or a pole and 100 feet (30 m) from another wall or pole (B).
2. Turn the laser on.
3. After it has self-leveled, stop the rotation and mark the location of the beam (center of the beam) on the near wall (A). Use a detector if ambient conditions are too bright.
4. Rotate the laser 180°. Mark the location of the center of the beam on the far wall (B).
5. Set up the laser about 2 feet (60 cm) away from the far wall. After the laser has self-leveled, line up the beam near the previous mark (B).
6. Mark the location of the beam (A') on the other wall near the first mark (A) and use the detector, if necessary.
7. Compare the two sets of marks on the wall. If the difference between AA'-BB' exceeds 1/4" (6 mm), contact your local service center.





## 5. CARE AND HANDLING

 **CAUTION**

The use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

The RL510 is a precision instrument which must be handled with care. Avoid shock and vibrations. Always store and transport the laser and its accessories in the carrying case. Although your RL510 is weather resistant, you must always keep your laser and its accessories dry and clean after use. This will increase the battery life.

Do not store your laser at temperatures below -4°F (-20°C) or above 176°F (80°C) because some electronic components could be damaged.

Do not store your instrument in its case if the instrument or the case is wet, to avoid water condensation inside the instrument. To maintain the precision of your RL510, check and adjust it regularly.

Keep the lenses of the apertures dry and clean. Use a soft cloth and glass cleaner to clean them.

We recommend to regularly charge the batteries of the RL510. Nevertheless, make sure to charge them only when they are out of power or becoming so. Recharging batteries that are still useable will shorten their capacity.

## **6. WARRANTY**

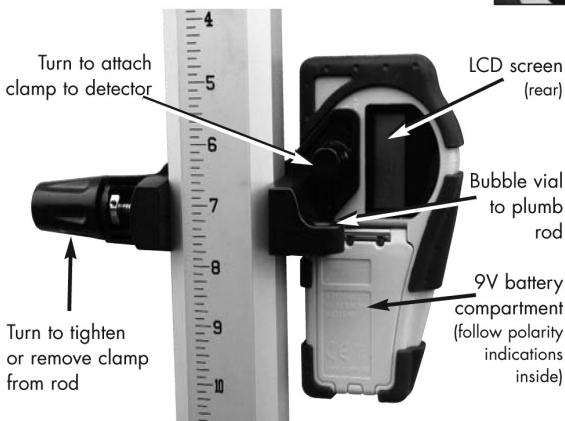
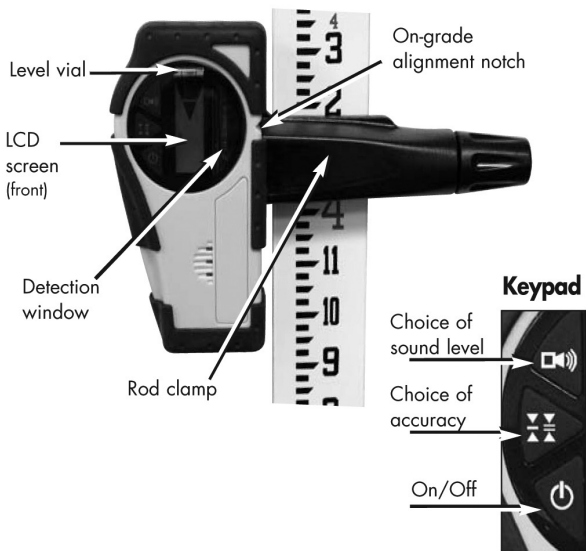
The RL510 is guaranteed to be free of manufacturing defects for a period of one year. Any abnormal usage or if the instrument has been subjected to shock will void this warranty. Under no circumstances will the liability of the manufacturer exceed the cost of repairing or replacing the instrument.

Disassembling the instrument by other than qualified and certified technicians will void this warranty.

Specifications subject to change without notice.

## 7. ACCESSORIES

### 7.1 Laser Detector



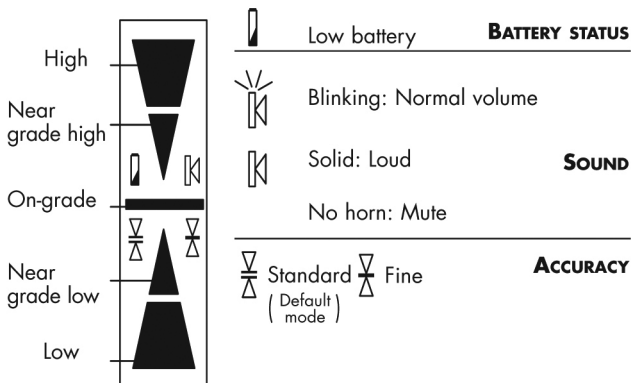
A detector is recommended when it is difficult to see the laser beam, such as outdoors or in bright light.

If you cannot pick up the beam with the detector, check how you are lined up with the laser. One of the head protection supports on the laser may be blocking the beam; move to the left or right to receive the beam.

Before using a detector, it is very important to set the RL510 in rotation mode.

**The receiver cannot detect the beam in chalk line mode.**

### • LCD Display



### 7.1.1 Using the Detector

1. Press the On/Off key to turn on the detector.
2. Press the middle key to select the accuracy (deadband).
3. Press the top key to select the sound level.
4. Turn the detection window towards the laser beam, and move the detector up or down according to the information given on the LCD display. There are 5 channels of information, or grade indicators. A down arrow indicates you must move the detector down to reach the laser reference; an up arrow, move it up. When a horizontal line appears on the display, the detector is at the same level as the laser beam.
5. Press the On/Off key to turn the detector off. It will automatically shut off after 10 minutes if not used (and give a warning beep).
6. Keep the detection window clean by using a soft cloth and glass cleaner.

### 7.1.2 Specifications

Range*:	500 ft. (150 m)
Accuracy*:	Fine $\pm 1/24''$ (1 mm) Coarse: $\pm 1/8''$ (2.5 mm)
Battery life:	50 hours ; 9V alkaline
Environmental:	Waterproof (IP66+)
Size:	6" x 3.25" x 1.5" (15 x 8 x 3.5 cm)
Weight:	0.35 lbs. (0.2 kg)

*\* Varies with laser used. Actual accuracy depends on beam diameter and distance to the laser.*

## **7.2 Tripods**

The RL510 can be mounted on a 5/8 – 11 flat head tripod. You can also use a tripod with an elevating column to adjust the height of the laser.

## **7.3 Other Accessories**

1. Laser-enhancing glasses improve the visibility of the laser beam in bright light conditions.
2. Red magnetic target improves the visibility of the laser beam in bright conditions. Quickly attaches to any metallic surface.
3. Seismic grid adaptor adapts the wall mount to wider wall angles when installing suspended ceilings.

## **7.4 Replacement Accessories**

1. Remote control
2. Ni-Cd battery pack
3. Alkaline battery cassette
4. AC charger
5. Red magnetic target
6. Laser-enhancing glasses

Contact your local Ramset distributor for accessory information.