

CST[®]
CST Corporation
No One Measures Up...Worldwide

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Chicago Steel Tape Berger Instruments Magna-Trak[®] LaserMark[®] Tru-Lock[™]

INSTRUCTION MANUAL

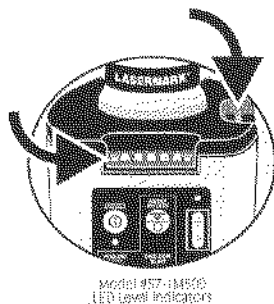
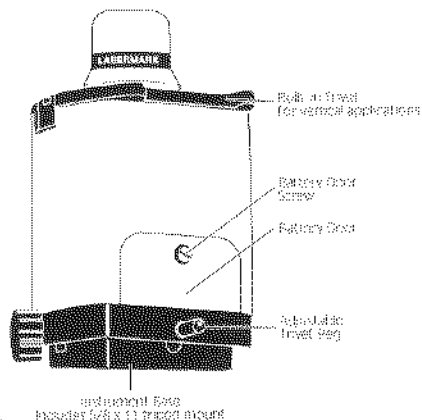
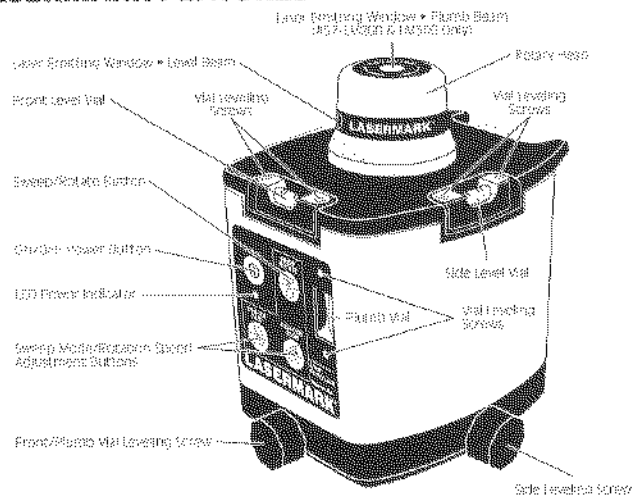
LASERMARK[®]

Rotary Level

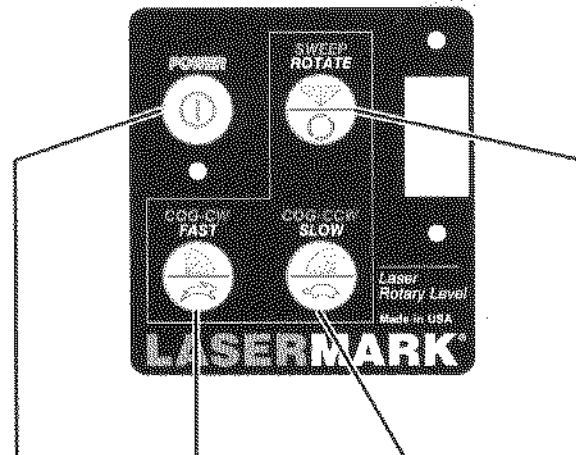


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1. LASERMARK FEATURES



2. LASERMARK CONTROLS



POWER:
Cycles between ON and OFF modes.

FAST ROTATION SPEED:
Increases speed in rotate mode up to 300 rpm.
In sweep mode, cogs head clockwise.

SLOW ROTATION SPEED:
Decreases speed in rotate mode down to 0 rpm.
In sweep mode, cogs head counterclockwise.

SWEEP/ROTATE:
Cycles through short sweep, long sweep, and rotate modes.
Head may be manually rotated during sweep mode to direct the level beam towards target.

3. LASER SAFETY

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

Do not stare into the laser beams. Do not disassemble the instrument or attempt to perform any internal servicing.

Repair and servicing of this laser are to be performed only by CST or authorized service centers.

This laser complies with all applicable portions of title 21 of the Code of Federal Regulations set by the Dept. of Health, Education, and Welfare, the Food and Drug Administration, the Center for Devices, and the Bureau of Radiological Health.



4. OPERATION

4.1 Leveling (for LM100 & LM200)

1:
Set the LaserMark® on a flat surface or mount to a $\frac{3}{4}$ " x 11 tripod. Level the instrument using the two leveling screws.

Each leveling screw controls the level vial above it. The vial bubble will move in the direction the leveling screw below is turned (for example, a clockwise turn will move the bubble to the right).

NOTE: The more accurately the vial bubbles are centered, the more accurate the laser beam will be for referencing level.

2:
Press the POWER button. The unit will operate in "ROTATE" mode.

3:
Mark the desired position (Fig. 1).

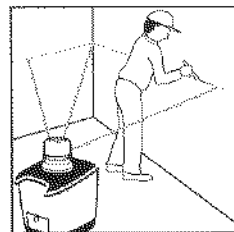


Fig. 1

4.2 Plumbing

1:
On a flat surface, place the LaserMark® on its back using the built-in trivet (front facing upward).

2:
Level the instrument by turning the front leveling screw; this screw adjusts the height of the trivet peg (Fig. 2).

Turning the leveling screw clockwise will shorten the trivet peg and move the plumb vial bubble towards the top of the instrument. A counterclockwise turn will move the bubble towards the base of the instrument.

3:
Press the POWER button.

4:
Mark the desired position.

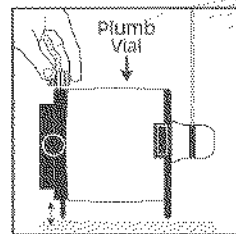


Fig. 2

#57-LM200 & LM300 models only—

Models LM200 & LM300 also emit a plumb beam from the top of the rotary head, perpendicular to the level beam, especially useful for checking 90° joints and edges, plus other alignment work.

4.3 Stopping the Rotary Head

It is possible to stop rotation of the head in order to manually direct the level beam towards your target.

1:
Press the POWER button.

2:
Press and hold the "SLOW" rotation speed button until the rotary head stops turning.

3:
Align the laser beam to your target by turning the head manually.

4.4 Sweep Mode

Use the sweep feature to create a highly visible laser "chalk line" with the level beam.

The unit powers on in "ROTATE" mode. Pressing the "SWEEP/ROTATE" button once will create a "short" sweep; pressing again will create a broader, "long" sweep.

The rotary head may be manually rotated in either of these sweep modes to direct the beam towards your target. The "FAST" and "SLOW" buttons may also be used to cog the sweep beam clockwise and counterclockwise, respectively.

5. 57-LM300 FEATURES

Using a state-of-the-art electronic tilt sensor, the LM300 provides an automatic shut-down feature to prevent poor readings in any mode.

5.1 Automatic Shut-Down

When the unit is bumped or moved more than one (1) minute out of level, the rotary head will stop motion, the laser will blink, and the LED power indicator light will flash from yellow to red. These signals tell the operator to manually re-level the unit (see below).

It is easy to override the auto shut-down feature. Pressing both the "FAST" and "SLOW" buttons at the same time disengages the electronic tilt sensor (auto shut-off mode) and converts the LM300 into a completely manual laser. You must have the unit in-level (LEDs reading yellow) to enter the Bypass mode.

5.2 LED Level Indicators

Instead of bubble level vials, the LM300 features two LED level indicators. To operate the LM300, set the unit on any flat surface or mount to a tripod. Similar to the other models, each leveling screw controls the LED level above it. The LEDs will illuminate in the direction the leveling screw below it is turned (for example, a clockwise turn will illuminate LEDs towards the right).

Turn the leveling knobs slowly; due to the increased sensitivity of the LED level indicators, any quick adjustments may make

finding level difficult.

Red LEDs indicate out-of-level, yellow LEDs indicate in-level. When the unit is brought in-level, the laser beam(s) will stop blinking and the unit will be fully operational.

With both yellow LEDs lit, the accuracy of the laser is $\frac{1}{8}"$ at 100 feet. The laser will still operate with both yellows and an adjacent red LED lit; however, laser accuracy will decrease to $\frac{1}{4}"$ at 100 feet (Fig. 3).

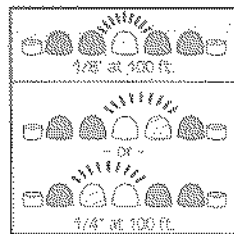


Fig. 3

5.3 Optional Remote Control

The LM300's optional remote control (#57-RC300) operates the unit up to 150 feet (45m) away. The remote controls all functions except power.

6. APPLICATIONS

Use your LaserMark® Rotary Level for these and many other projects:

WALL/CEILING MOUNT: Install Drop Ceiling Tiles, Light Fixtures (Fig. 4)

INDOOR LEVELING/PLUMBING: Window Frames, Cabinets & Shelves, Doors & Windows, Erecting Walls & Partitions, Aligning 90° Joints & Edges, Floors, Tile Work (Fig. 5)

OUTDOOR LEVELING/PLUMBING: Porches & Decks, Fencing, Flagpoles, Batterboards, Landscaping (Fig. 6)

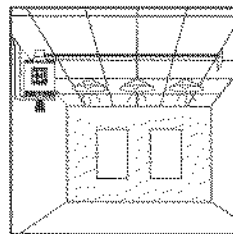


Fig. 4

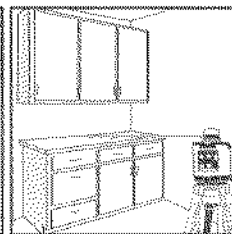


Fig. 5

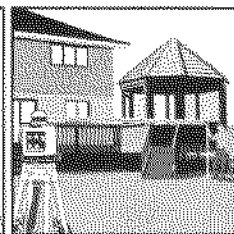


Fig. 6

7. BATTERY REPLACEMENT

Your LaserMark® Rotary Level will provide approximately 100 hours of intermittent use with four "C" cell batteries. If your LaserMark fails to rotate at a steady speed or emits dim laser beams, replace the batteries.

- 1: Remove the battery cover by turning the battery cover screw counterclockwise.
- 2: Remove the old batteries and replace with four new "C" cell batteries as illustrated (Fig. 7).
- 3: Replace the battery cover.

NOTE: Do not mix old and new batteries. Replace all batteries at the same time with new batteries. Remove batteries before storage of the instrument.

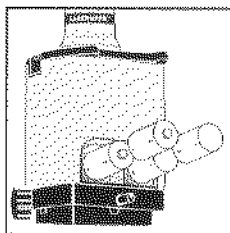


Fig. 7

8. CALIBRATION

Your LaserMark® Rotary Level can be user checked and calibrated to ensure optimum performance.

8.1 Checking Horizontal Rotation Error

- 1: Mount and level the LaserMark® on a tripod and place approximately 50 feet (15m) away from a wall. Face the front of the unit to the wall (Fig. 8).
- 2: Press the POWER button.
- 3: Mark the position of the laser beam on the wall.

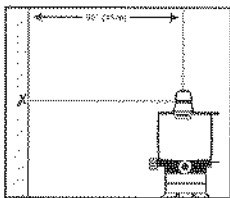


Fig. 8

- 4: Loosen the LaserMark from the tripod and rotate the instrument 180° so the rear of the unit faces the wall. Secure and re-level the unit.
 - 5: Again mark the position of the laser beam on the wall.
- No adjustment is necessary if the vertical difference between the first mark and second mark is less than 1/4 inch (3mm). Otherwise, adjust as follows

8.2 Adjusting Horizontal Rotation Error

- 1: Adjust the side leveling screw until the laser beam rests midway between the two marks (Fig. 9). Clockwise rotation will lower the beam; counterclockwise rotation will raise the beam (Fig. 10). The side vial bubble will shift from center.
 - 2: Center the side vial bubble by adjusting the vial leveling screws with a 3/64" hex key.
 - 3: Recheck the accuracy of horizontal rotation by repeating steps 1-5 in section 8.1. Readjust as necessary.
- Repeat the above checking and adjusting procedures using the left and right sides of instrument, adjusting the front leveling screw and front vial as necessary.

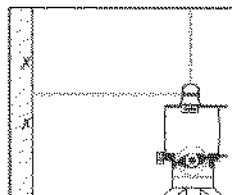


Fig. 9

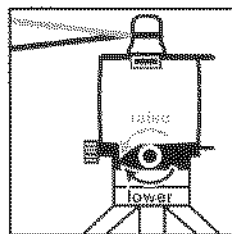


Fig. 10

8.3 Checking Horizontal Rotation Error of Cone

NOTE: Correct any horizontal rotation error using the above steps before proceeding with this section.

1:
Mount and level the LaserMark® on a tripod and place at the midpoint between two walls approximately 100 feet (30m) apart. Face the front side to wall 1, and the back side to wall 2 (Fig. 11).

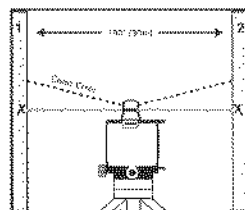


Fig. 11

2:
Press the POWER button.

3:
Mark the position of the laser beam on walls 1 and 2 as a horizontal line.

4:
Reposition the LaserMark approximately 3-6 feet (1-2m) from wall 1 without changing the orientation of the instrument.

5:
Measure the distance between the marks and the current position of the laser beam on walls 1 and 2.

If the differences are identical on both walls, there is no rotation error of cone. If the difference exceeds $\frac{1}{8}$ " (4mm), contact CST or an authorized service center.

8.4 Checking Vertical Rotation Error

1:
Set the instrument on its trivet on a floor approximately 100 feet (30m) from the base of a wall. The right side of the instrument should face the wall. Level the unit.

2:
Press the POWER button. Press the "SLOW" rotation speed button to stop the rotary head.

3:
Mark a control point "A" on the wall as illustrated (Fig. 12). Turn the head manually until the laser beam hits point A on the wall.

4:
Manually turn the head to move the laser beam 30 feet (9m) upward on the wall and mark this as point B.

5:
Turn the instrument 180° and align the beam to point A, re-leveling if necessary.

6:
Manually turn the head to move the laser beam to the same height as point B, and mark as point C (Fig. 13).

No adjustment is necessary if the difference between points B and C is less than $\frac{1}{8}$ inch (3mm). Otherwise, adjust as follows.

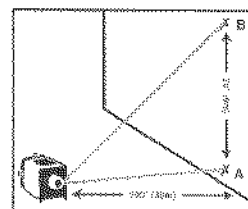


Fig. 12

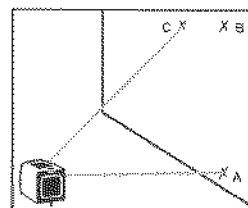


Fig. 13

8.5 Adjusting Vertical Rotation Error

1:
Turn the front leveling screw until the laser beam rests midway between points B and C (Fig. 14). This will cause the plumb vial bubble to shift from center.

2:
Center the plumb vial bubble by adjusting the vial leveling screws with a $\frac{1}{16}$ " hex key.

3:
Recheck the accuracy of vertical rotation by repeating steps 1-6 in section 8.4. Readjust as necessary.

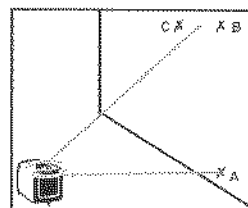


Fig. 14

9. CARE OF INSTRUMENT

Always clean the instrument after use. Use a soft, dry cloth to remove any dirt or moisture from the instrument. Do not use benzene, paint thinner, or other solvents to clean the instrument.

10. SPECIFICATIONS

Accuracy, 57-LM100/-200: ¼" at 100 feet (5mm at 30m)

57-LM300: Yellow LED lit, ⅛" at 100 feet (2.5mm at 30m);

Yellow & adjacent red LED lit, ¼" at 100 feet (5mm at 30m)

Range: Up to 200 feet (60m) diameter interior, 800 feet (250m) diameter exterior with optional laser detector

Level & Plumb Vial Sensitivity: Level, two minutes;
plumb, five minutes

Mounting Screw: ⅝ x 11 for standard tripods; use on dome or flat heads

Weight: 2.2 lbs. (1kg) without batteries; 3.75 lbs. (1.7kg) with batteries

Power, 57-LM100/-200: Four "C" cell batteries; provides 100 hours intermittent use, 40 hours continuous use

57-LM300: Four "C" cell batteries; provides 90 hours intermittent use, 36 hours continuous use

Rotation Speed: 0-300 RPM variable speed

Specifications subject to change without notice.

11. WARRANTY

This LaserMark® Rotary Level is warranted to the original purchaser to be free from defects in workmanship and material. CST Corporation will repair or replace any defective part which may malfunction under normal and proper use within a period of TWO YEARS from the date of purchase without charge of parts and labor, once delivered and shipped prepaid to CST together with proof of date and place of purchase. This warranty is not subject to misuse, abuse, assignment, or transfer. The exclusive remedy under any and all warrants and guarantees, expressed or implied, is limited to repair and/or replacement as provided herein, and CST shall not be liable for damages from loss or delay of equipment uses, consequential, or incidental damage.

Please fill out and return the attached warranty registration card.

12. CERTIFICATION

The LaserMark® rotary level has been tested and complies with the CE certification requirements set forth in EN55022:1994 Class B, EN 50081-1:1992, and EN 50082-1:1992 as recorded in Test Report 50334-61364.

Exception: When discharging 8 kV onto the laser head or onto the attaching screws of the bubble sextant, operation stops. After reset: normal functioning.

Test Date: 11/20/1996