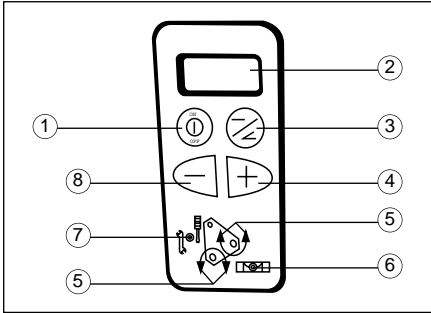




1242 Laser Transmitter Quick-Reference Card



Features and Functions

- 1. Power Button**—turns the laser on/off.
- 2. Liquid Crystal Display (LCD)**—shows the laser's operating modes, percentage of grade, approximate charge of the batteries, and beam's rotation speed.
- 3. Mode Button**—allows you to choose the laser's operating modes, which include automatic self-leveling, grade, and manual.
- 4. Increase Button**—allows you to increase the laser's percentage of grade and the beam's rotation speed.
- 5. Leveling Screws LEDs**—flash while the laser self levels in automatic self-leveling or grade mode.
- 6. Level LED**—lights when the laser has self leveled in automatic self-leveling or grade mode.
- 7. SafeGuard™ LED**—flashes if the laser has received an impact that could have caused the self-leveled laser beam to be inaccurate.
- 8. Decrease Button**—allows you to decrease the laser's percentage of grade and the beam's rotation speed.

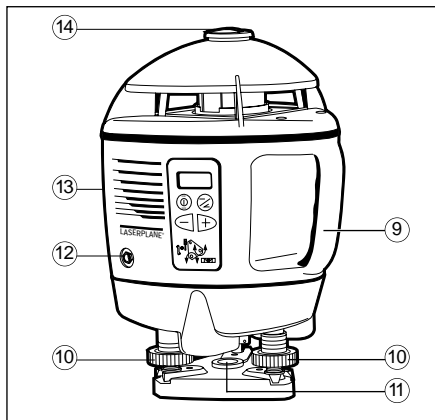


Made in U.S.A.



Features and Functions (cont.)

- 9. Handle**—allows you to carry the laser easily.
- 10. Leveling Screws**—allow you to adjust the laser beam so that it matches an existing grade when the laser is in manual mode.
- 11. 5/8-11 Tripod Mount**—allows the laser to be attached to a standard 5/8-11 tripod or column mount.
- 12. Battery Recharging Jack**—is the port that the battery recharger plugs into.
- 13. Battery Housing** (on back)—holds four D-cell alkaline or Ni-Cd batteries.
- 14. Pointing-Control Knob**—allows you to point the laser beam when it is not rotating.



Setting Up the Laser in Automatic Self-Leveling Mode

The laser can be used with or without a tripod. If you are using the laser without a tripod, make sure you set the laser on a stable surface.

1. Set up a tripod to the height appropriate for your application needs.
2. Attach the laser to the tripod.
3. Press the power button.

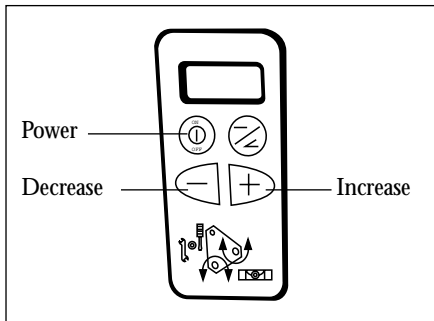
Note: The laser always starts up in automatic self-leveling mode. When the laser is initially turned on, the LCD shows the approximate charge of the batteries (for about 10 seconds) and the leveling-screws LEDs flash to show the direction that the leveling screws are turning to level the laser. When the laser is level, three dashes appear in the LCD (---), the level LED lights, and the laser beam rotates at 600 rpm (the speed needed for use with a receiver).

4. Select the beam rotation speed that is appropriate for your application needs.

To decrease the rotation speed, press the decrease button. To increase the rotation speed, press the increase button.

Four rotation speeds are available:

- SP0 0 rpm, can be used for sewer pipe and alignment applications
- SP1 50 rpm, can be used for interior alignment applications
- SP2 300 rpm, can be used for interior and machine control applications
- SPF 600 rpm, the speed needed for use with a receiver



Setting Up the Laser in Grade Mode

1. Set up a tripod to the height appropriate for your application needs.
2. Attach the laser to the tripod. Make sure that the handle is directly over a tripod leg so that you can incline the tripod in the up-grade direction. Grade is set in the direction of the up-grade label.

3. Press the power button.

Note: When the laser is initially turned on, it is in automatic self-leveling mode and the LCD shows the approximate charge of the batteries.

4. Press the mode button once to change the laser from automatic self-leveling mode to grade mode.

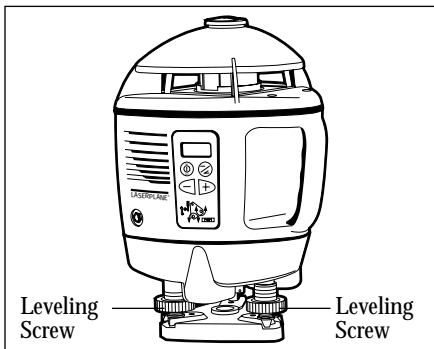
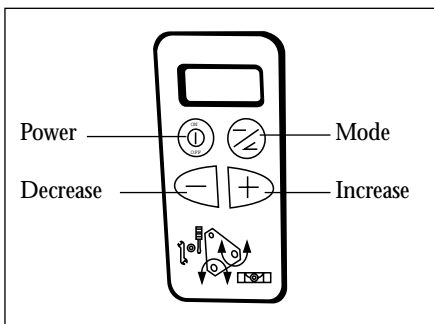
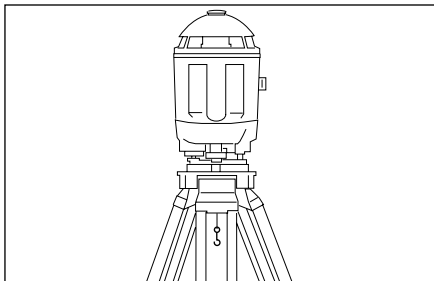
Note: The percentage of grade last entered into the laser appears in the LCD. The grade can be quickly adjusted to 0.10% by simultaneously pressing and holding the increase and decrease buttons.

5. Select the percentage of grade that is appropriate for your application needs. To decrease the percentage of grade, press and hold the decrease button. To increase the percentage of grade, press and hold the increase button. When the desired grade appears in the LCD, the laser automatically adjusts to the grade shown.

Note: If the leveling screws LEDs continue to flash after the laser has tried to self level, the laser is beyond its self-leveling range. To get the laser within its self-leveling range, turn the leveling screws in the direction shown in the leveling screws LEDs or incline the tripod in the up-grade position.

Note: For grades greater than 9.0%, incline the tripod in the up-grade direction.

Note: When the laser is in grade mode, the beam's rotation speed is 600 rpm.



Setting Up the Laser in Manual Mode

1. Set up a tripod to the height appropriate for your application needs.
2. Attach the laser to the tripod.
3. Press the power button.

Note: When the laser is initially turned on, it is in automatic self-leveling mode and the LCD shows the approximate charge of the batteries.

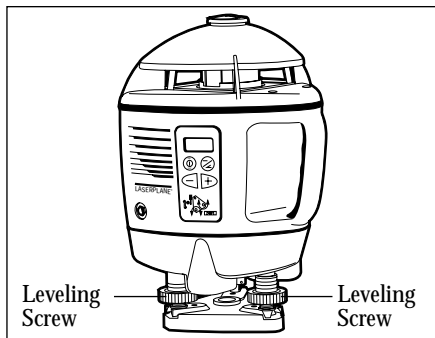
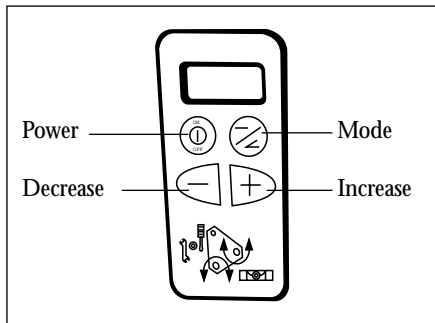
4. Press the mode button twice to change the laser from automatic self-leveling mode to manual mode.
5. Make sure the beam's rotation speed is appropriate for your application needs.

To decrease the rotation speed, press the decrease button. To increase the rotation speed, press the increase button.

Four rotation speeds are available:

- SP.0 0 rpm, can be used for sewer pipe and alignment applications
- SP.1 50 rpm, can be used for interior alignment applications
- SP.2 300 rpm, can be used for interior and machine control applications
- SP.F 600 rpm, the speed needed for use with a receiver

6. Adjust the leveling screw(s) until the laser beam matches the desired slope or grade.



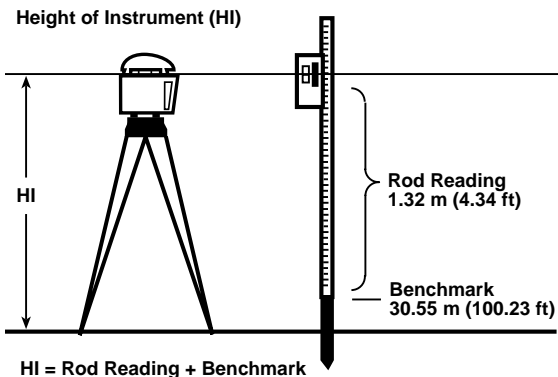
Basic Construction Techniques

Determining the Height of Instrument (HI)

The height of instrument (HI) is the elevation of the laser's beam. The HI is determined by adding the grade-rod reading to a benchmark or known elevation.

1. Set up and level the laser as described in "Setting Up the Laser in Automatic Self-Leveling Mode."
2. Attach the receiver to a grade rod and turn on the receiver.
3. Place the grade rod on a job-site benchmark (BM) or known elevation.
4. Slide the receiver up/down the grade rod until the LCD shows an on-grade reading.
5. Add the grade-rod reading to the benchmark to determine the height of instrument.

*Example: Benchmark elevation = 30.55 m (100.23 ft)
On-grade rod reading = 1.32 m (4.34 ft)
Height of instrument = 31.87 m (104.57 ft)*

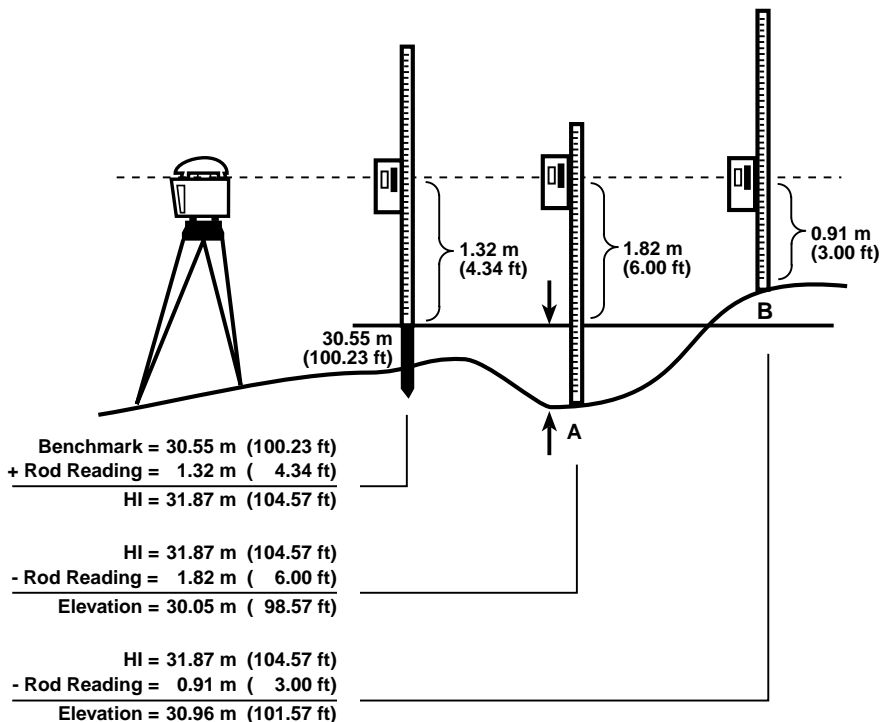


$$HI = 1.32 \text{ m} + 30.55 \text{ m} = 31.87 \text{ m} \quad (4.34 \text{ ft} + 100.23 \text{ ft} = 104.57 \text{ ft})$$

6. Use this HI as a reference for all other elevations.

Determining the Difference in Elevation

1. Set up and level the laser as described in "Setting Up the Laser in Automatic Self-Leveling Mode."
2. Determine the height of the instrument (HI) as described in "Determining the Height of Instrument."
3. Place the grade rod on the point where you need an elevation reading.
4. Slide the receiver up/down the grade rod until the LCD shows an on-grade reading (rod reading A).
5. Calculate the difference between the HI and rod reading A. See the illustration below for more information.
6. Place the grade rod on another point where you need an elevation reading.
7. Slide the receiver up/down the grade rod until the LCD shows an on-grade reading (rod reading B).
8. Calculate the difference between the HI and rod reading B. See the illustration below for more information.



Advanced Construction Techniques

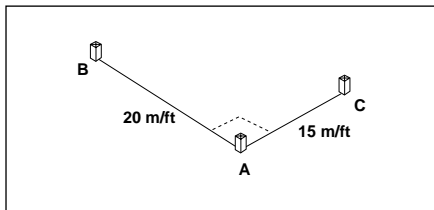
Establishing Compound Slope and Direction

Although the 1242 is a single-axis grade laser, it is capable of producing a compound slope. Use the following equation to determine a compound slope (D) from two slopes that are 90° from each other. Having a calculator to perform this equation is helpful.

$$D\sqrt{= B^2 + C^2} \quad \begin{array}{l} B = \text{Major Slope} = 2.0\% \\ C = \text{Minor Slope} = 1.5\% \end{array} \quad D\sqrt{= B^2 + C^2} = \sqrt{2^2 + 1.5^2} = 2.5\%$$

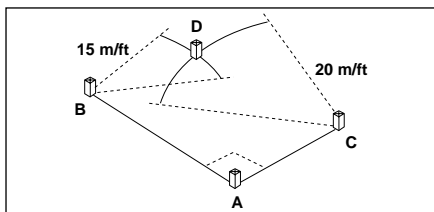
To establish the compound slope direction, you need to convert the major and minor slopes into distances. For example: 2.0% slope equals 2.0 meter/feet at 100 meter/feet and 1.5% slope equals 1.5 meter/feet at 100 meter/feet.

1. Starting at control point A, set two stakes (B and C) in the ground 90° apart at a distance equal to their slopes. *Example: 2.0% = 2.0 m/ft and 1.5% = 1.5 m/ft.*

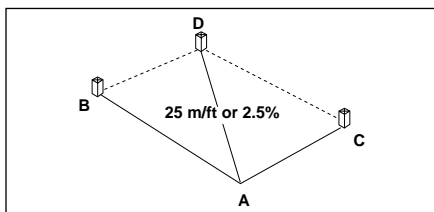


Note: The greater the distance, the greater the accuracy, therefore use 20 and 15 meters (feet).

2. At stakes B and C, swing arcs equal in length to the other slopes. Set a fourth stake (D) where arcs B and C intersect.



3. Measure the distance between stakes A and D to identify both the direction and amount of the compound slope. *Example 25 m/ft or 2.5% slope.*



4. Set up the laser in grade mode. Make sure the laser is set up over point A and is pointing toward stake D. See "Setting Up the Laser in Grade Mode" for more information.
5. Enter the correct slope and allow the laser to self-level. *Using the example above you would enter 2.5%.*

