

## Operator's Manual



8261 State Route 235  
Dayton, OH 45424 USA  
Phone: (937) 482-0200  
Fax: (937) 482-0030  
[www.apache-laser.com](http://www.apache-laser.com)



## LIGHTNING® Laser Detector

Thank you for purchasing an Apache Technologies, Inc. product. Your LIGHTNING™ Laser Detector is a premium quality tool that has been designed and manufactured to provide years of precise and reliable performance.

This manual is an important part of your purchase as it will familiarize you with the unit and explain the numerous features that have been designed into it. Please read this manual thoroughly before using your detector.

Please contact your Apache dealer or the Apache factory should you have questions regarding specific applications or if you require additional information.

**IMPORTANT:** Fill out the Warranty Registration Card and return it to Apache Technologies, Inc.

Please record your Laser Detector information below.

MODEL NUMBER: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

DATE OF PURCHASE: \_\_\_\_\_

PURCHASED FROM: \_\_\_\_\_

\_\_\_\_\_

PHONE: \_\_\_\_\_

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## General Description

The LIGHTNING high performance hand-held laser detector is designed to receive reference elevation information from all rotating laser levels. The detectors are designed to receive invisible laser beams as well as visible beams from Helium-Neon and diode lasers.

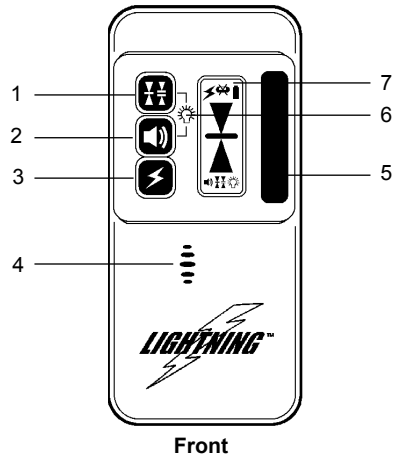
The detector includes a Liquid Crystal Display (LCD) on the front and rear for easy visual indication of the reference plane of laser light. A beeper also emits an audible tone that indicates on-grade, high or low. Accuracy levels are user selectable to meet various job requirements.

The LIGHTNING Detectors have been specifically designed for use in harsh, loud construction environments. Impact resistant housings, recessed windows, waterproof design, durable battery contacts, and a high volume beeper are incorporated into every detector.

A general purpose clamp is designed to mount the detector on various grade rods and staffs. The clamp can be mounted to round, oval, square, and rectangular rods, as well as various sizes of wooden staffs.

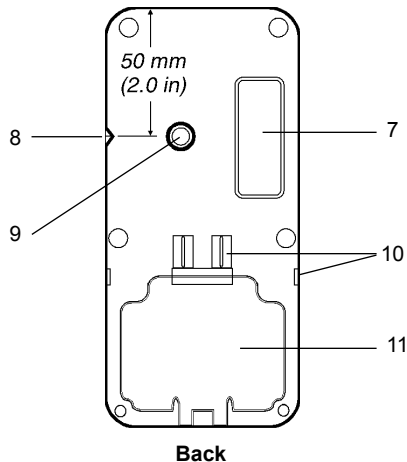
An optional Remote Display Model 48 is available that allows grade information to be seen at eye level when the laser detector and beam are high above or below the work area. The remote display LCD indicates the same information as the detector LCD.

## Operation - Model 44



1. **Accuracy Switch** - Selects detection accuracy. Pressing switch cycles 3 accuracy options. Default setting is Medium.
2. **Volume Switch** - Selects the sound level. Pressing switch cycles Loud, Off, and Low. Default setting is Loud. When sound is Off, 1 beep indicates laser is detected.
3. **Power Switch** - Turns the detector On and Off.
4. **Beeper Output** - Fast audible signal is detector Too High; solid is On-Grade; slow is Too Low.
5. **Reception Window** - Houses the photocells which detect the laser signal. Window must be directed toward laser.
6. **Backlighting** - Pressing switch 1 & 2 together turns LCD backlighting on. Pressing again turns backlighting off.

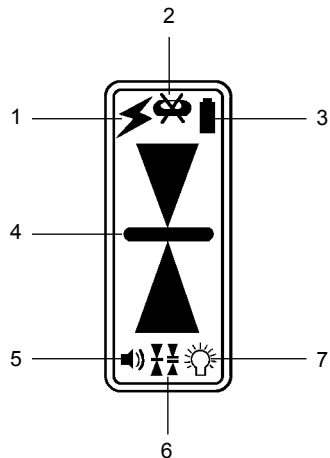
## Operation - Model 44



Back

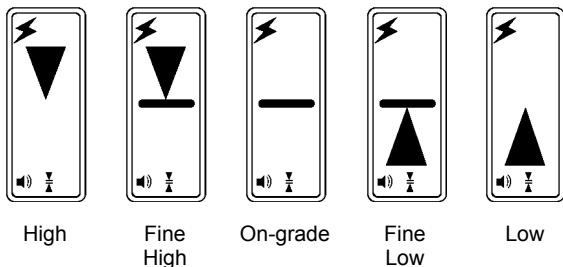
7. **LCD Window** - Front and rear LCD's indicate the detectors position relative to the laser beam and detector settings.
8. **Offset Notch** - Used for transferring reference marks. Top of detector is 2" (50 mm) above "On-Grade".
9. **Captive Screw Thread** - Detector thread accepts general purpose clamp screw to secure detector to the clamp.
10. **Contact Plates and Mounts** - Connections for attaching the Model 48 Remote Display.
11. **Battery Door** - Sealed battery compartment houses 2 "AA" batteries and serial number label. To install batteries, use a coin to open door. Insert batteries noting plus (+) and minus (-) terminal diagram on the detector housing.

## Liquid Crystal Display (LCD) - Model 44

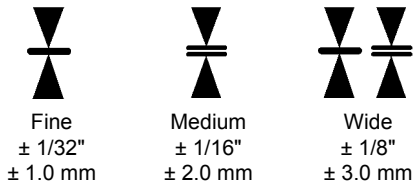


1. **Power On** - Indicates detector on or off.
2. **Laser Out of Level** - Laser outside self-leveling range. (Service Center set option)
3. **Low Battery Warning** - replace batteries within 2 hours after low battery warning is displayed.
4. **5 Channel Grade Indicator** - high, fine high, on-grade, fine low, and low. (Details on page 6)
5. **Beeper Volume** - Loud, Off, and Low.
6. **Detection Accuracy Indicator** - Fine, Medium and Wide. (Details on page 6)
7. **LCD Backlight On** - Indicates backlight is on.

## LCD Grade Indication - Model 44



## Detection Accuracy Indicator

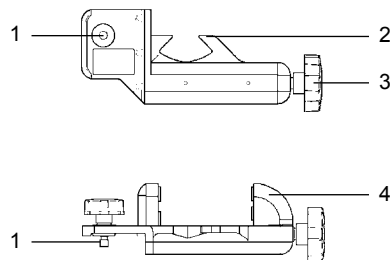


**NOTE:** Infinite Accuracy setting for Laser Calibration.

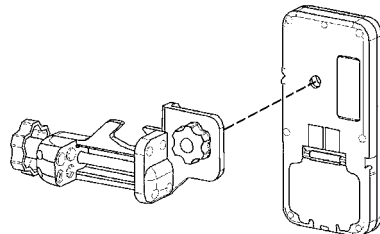
To set Infinite Accuracy, the detector must be turned off. Press and hold down Accuracy Switch. Press Power On switch and release Accuracy Switch before beeper turns off. No accuracy indicator on the LCD confirms Infinite Accuracy is set.

"On-Grade" is when the High arrow and Low arrow are equally intermittently displayed.

## General Purpose Clamp - Model 42

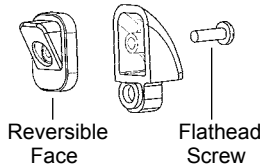
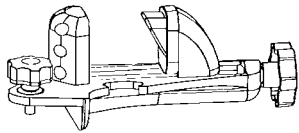


1. **Captive Screw** - Attaches the general purpose clamp to the detector.
2. **Reference Indicators** - points are aligned with detector "on-grade" for grade rod readings.
3. **Clamping Screw** - Locks clamp to rods and staffs by moving traveling jaw.
4. **Traveling Jaw** - grips tightly to rods and staffs.



Captive screw attaches to back of detectors as indicated.

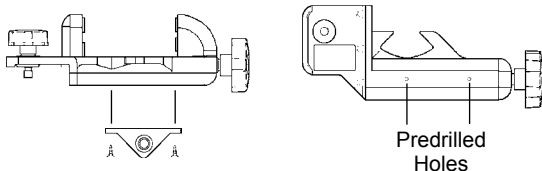
## General Purpose Clamp - Model 43



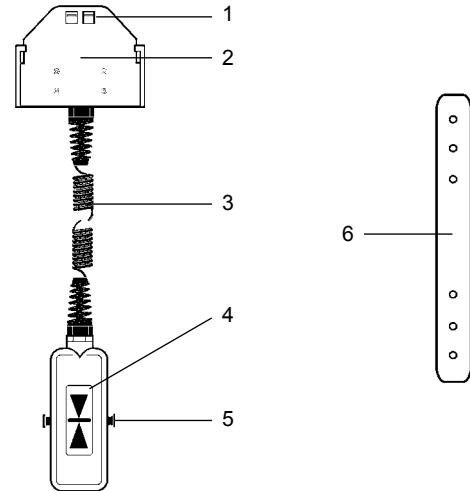
The Model 43 clamp has the same captive screw, reference indicators, and clamping screw as the Model 42 except that the traveling jaw has a reversible face to adapt to various rods. The slanted face grips tightly to round and oval rods. The flat face grips tightly to rectangular rods. To change the face of the jaw, simply remove the screw with a flathead screwdriver, flip the face over, and secure the screw back into the face.

## Optional Bubble Vial Kit

The optional Bubble Vial aids in keeping grade rods plumb when taking rod readings. The vial is supplied with 2 Phillips-head screws that attach it to the Model 42 or 43 General Purpose Clamp. Holes are predrilled on the front of the clamps as indicated below.



## Remote Display - Model 48



1. **Remote Display Contacts** - Two self-cleaning (during attachment) contacts mate to the detector contacts.
2. **Connecting Plate** - Attaches to rear mounting guides of detector.
3. **Coil Cord** - 10 foot (3 m) coiled cable carries the signals from the detector to the remote LCD.
4. **Liquid Crystal Display** - Indicates detector position and status. Display is same as on detector.
5. **Mounting Strap Mounts** - Accepts mounting strap.
6. **Mounting Strap** - Attaches remote display to grade rods or staffs for readings at eye level.

## Maintenance and Safety



### Detector Cleaning:

Do not wipe dust or dirt off the detector reception or display windows with a dry cloth or other abrasive material as scratching could occur, reducing visibility through these windows. A soft cloth and mild soap and water are effective. The unit may be submerged under water or sprayed with a low pressure hose if necessary. Do not use any other fluids other than water or glass cleaner, as they may attack polymer components.



### Transport:

Use the original carton or a laser instrument case to transport the detector.



### Storage:

If the detector will not be used for a month or more, it is recommended to remove the batteries from the unit.



### Batteries:

It is recommended to use only high quality alkaline batteries.



### Intended Uses of Detector:

The laser detector is designed and suitable for detecting a rotating laser beam.



### Prohibited Uses:

- Operation without instruction.
- Operation other than the intended uses.
- Opening the detector, except the battery compartment.
- Modification or conversion of the detector.
- Use of accessories from other manufacturers.



### Precautions:

- The person in charge of the detector must understand the manual instructions and ensure other users do also.
- Periodically carry out test measurements, particularly after the detector has been subjected to abnormal use.

## Specifications - Model 44

Working Radius:	Up to 2000 ft. (600m) Laser Dependent
Beam Reception Range:	± 45°
Beam Window Height:	2" (50 mm)
Detectable Spectrum:	610nm to 900nm (visible & invisible diodes, HeNe tubes)
Beam Sizes Received:	1/4" to 3/4" (6 mm to 19 mm)
Detection Accuracy:	Infinite: ± 0" (± 0 mm) Fine: ± 1/32" (± 1 mm) Medium: ± 1/16" (± 2 mm) Wide: ± 1/8" (± 3 mm)
Display Channels:	Fine: 5 Medium: 5 Wide: 3
Beeper Volumes:	High: 109 dBA Low: 65 dBA Off
LCD Backlighting:	Yes, Front & Rear
Remote Display Outputs:	Yes, 2 Contacts
Power Supply:	2 x 1.5V "AA" Batteries
Battery Life (alkaline):	>70 hours, continuous
Operating Temperature:	<-20°C to >+50°C
Storage Temperature:	-40°C to +70°C
Automatic Shut-off:	30 minutes / no use
Weight (with batteries):	10 ozs. (275g)
Dimensions (HxWxD):	6.4 x 2.9 x 1.0 in. (163 x 74 x 26 mm)

*\*Specifications subject to change without notice*

## Warranty

Apache Technologies, Inc. LIGHTNING laser detectors and detector accessories are warranted to be free of defects in material and workmanship for a period of two years. This warranty period is twenty-four months from the date the product is delivered from the dealer to the purchaser or is put into service by a dealer as a demonstration unit or rental unit. In addition to the basic warranty above, Apache Technologies, Inc. may choose to repair or replace, at its discretion, any detector, in the event of failure for any reason, during the warranty period.

A Warranty Registration Card must be filled out properly and on file with Apache Technologies, Inc. or proof of purchase presented to obtain warranty service.

Any evidence of misuse, alteration, or an attempt to repair products by unauthorized personnel, or use of parts other than those provided by Apache Technologies, Inc. automatically voids the warranty. Competitor purchased and tested units are excluded from this warranty.

The user of the product is expected to follow all operating, maintenance and care instructions.

Apache Technologies liability under this warranty is limited to repairing or replacing any product returned to its factory for that purpose. The foregoing states the entire liability of Apache Technologies, Inc. regarding the purchase and use of its product and they shall not be held responsible for any consequential loss or damage of any kind.

This warranty is in lieu of all other warranties, expressed or implied, and constitutes all of Apache Technologies, Inc. liability with respect to merchandise sold by it.

## CE DECLARATION OF CONFORMITY

Application of Council Directive:

89/336/EEC

Manufacturer's Name:

Apache Technologies, Inc.

Manufacturer's Address:

8261 State Route 235  
Dayton, OH 45424 USA

European Representative Address:

Apache Technologies Europe GmbH  
Langenberger Str. 590  
D-45277 Essen, Germany

Model Number(s):

Lightning Model 44, 48

Equipment Type / Environment:

ITE / residential, commercial, light industrial

Harmonized Standards Applied:

Electromagnetic Compatibility (EMC),  
EN 61000-6-1: 2001; EN 61000-4-2: 1995  
EN 61000-4-3: 1995; EN 61000-4-8: 1995  
EN 61000-6-3: 2001; EN 55011: 1998

We herewith declare, in exclusive responsibility, that the instrument conforms to the above mentioned directive including their amendments up to the date below.

September 2003



Robert G. Conner, President

### Notice to Our European Union Customers

For product recycling instructions and more information, please go to: [www.trimble.com/environment/summary.html](http://www.trimble.com/environment/summary.html)

### Recycling in Europe

To recycle Trimble WEEE, call: +31 497 53 2430,  
and ask for the "WEEE associate," or  
mail a request for recycling instructions to:

Trimble Europe BV  
c/o Menlo Worldwide Logistics  
Meerheide 45  
5521 DZ Eersel, NL

