

LASER DEVICES

Light is a form of electromagnetic radiation the same as radio and microwaves. The difference is that light has a much higher frequency than either radio or microwaves. The light emitted by laser is no different from that emitted by any other light source, but a laser has a unique method of generating light.

The word LASER is actually an acronym that stands for "Light Amplification by Stimulated Emission of Radiation". The LASER determines speed by measuring the time of flight of very short pulses of infrared light. **Figure 12-3**

In theory, it is possible to make a speed measurement using only two pulses as described above. In practice this would be prone to errors, such as a shift of the aiming point between pulses. To eliminate the possibility of such errors, the LASER uses as many as sixty pulses to measure the speed of the target. Seven independent tests are applied to the pulse data and a failure of any one of the tests results in an error message being displayed on the readout window. The actual speed calculation that the LASER uses is not a simple distance divided by time formula. The distance to the target is not used and the target speed is calculated as a fraction of the speed of light. Also, the target speed is derived from the entire data set using the method of least squares.

The laser device emits a narrow cone of radiation (LASER light), that is directed into a very narrow beam that gives the LASER its pinpoint targeting ability. The beam is 3 feet wide at 1,000 feet. The effective range is about 2,000 feet as compared to radar's 2,500 to 3,000 feet, still plenty of time to develop a tracking history. The LASER can only be used from a stationary position. Because of the nature of the LASER it

is not prone to the interferences that a radar device experiences. However, it is still prone to operator misuse or mis-operation due to lack of training.

Currently, there are two separate devices on the market one from Kustom Signals and the other from Laser Technology Incorporated. The price of the devices is still somewhat high, but like any other new technology as time passes and more are purchased the price will get lower.

The manufacturers claim that the LASER's are superior to radar because of the following factors:

- * Simplified training and operation.
- * Positive target identification.
- * Instantaneous readings.
- * Non-detectable by a "LASER Detector" (No such device exists).
- * Fewer court challenges because erroneous readings are eliminated.
- * Low maintenance.

OPERATION OF SPECIFIC RADAR DEVICES

INTRODUCTION

This section of the book will introduce you to several different types of radar devices. This will assist you in being able to describe the different components available on the different units that are manufactured in the United States. Also, it will assist you in setting up testing and operating the various units available. Currently in the United States there are four major manufacturers

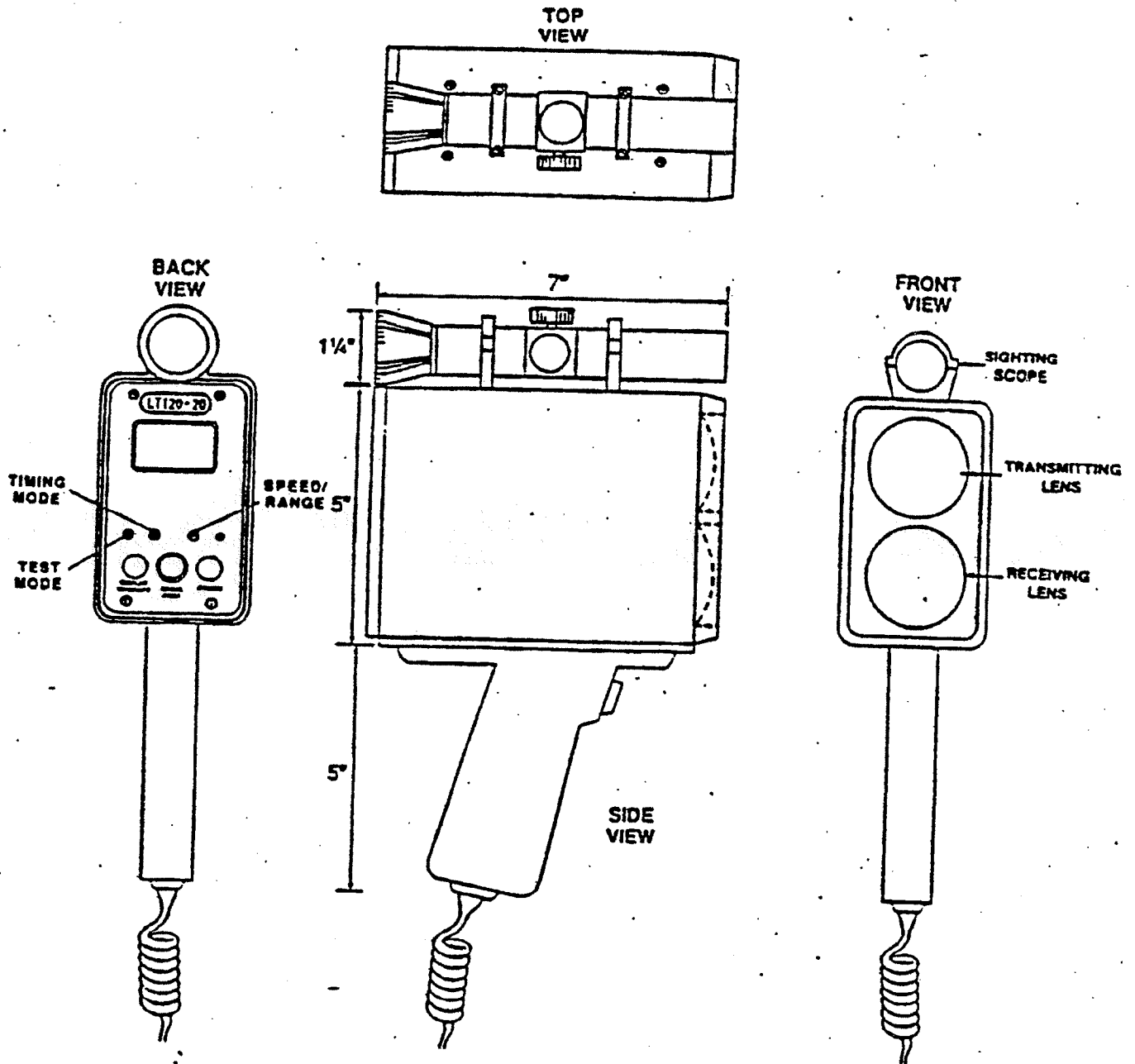


FIGURE 12 - 3