

Draft

Speed Products Inc.

**TruSpeed
Radar Gun**

Operator's Manual

Speed Products Inc.
Suite 402, 3587 Route 9,
Freehold, NJ 07728

Thank You for buying TruSpeed, the most innovative radar gun on the market today. Speed Products Inc. has combined "state of the art" microwave technology with DSP (digital signal processing) to build the world's smallest, lightest weight, radar gun. TruSpeed is highly accurate with a maximum internal error of ± 0.4 mph and is highly sensitive, able to determine the speed of a car over 700 feet away. Yet TruSpeed consumes very little power, operating for over 12 hours on two nine volt batteries. TruSpeed includes a number of easy-to-use modes designed to increase TruSpeed's usefulness, including Trigger and Continuous modes and a variable Memory mode. These modes combined with the built-in tripod mount makes taking speed measurements easy and enjoyable. TruSpeed can be used on almost anything that moves and for most sports including, baseball, hockey, soccer, and radio controlled cars, We hope you have as much fun using TruSpeed as we have had testing it.

SPECIFICATIONS

Speeds: 15mph to 150mph

Distances: Operating ranges of TruSpeed and all radars are highly dependent on the size, shape and composition of the target. In general the larger the target the greater the distance that it can be detected. Metal targets can be detected at distances much greater than that of nonmetallic targets. Environmental conditions can also effect TruSpeed's range. The operating range will be less on rainy and humid days. Typical maximum operating ranges for TruSpeed are shown below:

<u>Target</u>	<u>Operating Range</u>
Baseball	60ft.
Car	700ft

Battery Requirements: TruSpeed will last for approximately 10-15 hours on two high quality nine volt batteries. A "LOBAT" signal will appear approximately one hour prior to loss of power. Note: TruSpeed will operate at peak performance until loss of power.

Accuracy: TruSpeed's maximum internal error is ± 0.4 mph. TruSpeed rounds off to the nearest mph.

Weight: 12ounces including batteries

Size: 8"x3"x1.5"

TruSpeed complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference.
- 2) This device must accept any interference received including interference that may cause undesired operation.

Any changes or modifications to the TruSpeed unit, without prior approval of Speed Products Inc. could void the operators' authority to use TruSpeed.

FCC ID: NHWSPEED

OPERATION

First Slide Switch

Off: The TruSpeed unit is off.

Trigger Mode: The fastest speed detected in the three second interval after the Trigger button is pressed is displayed. The measured speed must be greater than 15mph, otherwise a blank screen will be displayed. This mode is ideal for measuring an object's peak speed and for maintaining the measured speed on the LCD. Note: Battery lifetime will be the same in both Trigger and Continuous modes.

Continuous Mode: The fastest speed detected above 15 mph will be displayed every three seconds. Time intervals which do not have a speed greater than 15mph will display the previously displayed speed. This mode is ideal for measuring the speed of "larger" objects as they travel along their path. (i.e. car, bike skater, runner, etc.) Continuous mode also provides optimum use for readings taken with the unit mounted on a tripod. This arrangement can be used for measurements of peak speeds without having to hold the unit - allowing a single person to record his/her own speeds. (i.e. pitches, swings, kicks, etc.) Previous readings can be displayed using the Memory button.

Second Slide Switch

Memory Update Switch: The memory update switch controls how quickly the measured speeds are stored in memory. TruSpeed contains two different Update modes: the Slow mode and the Fast Mode.

Slow Mode: In the Slow mode, the greatest speed measured while in the Trigger mode will be stored in memory and the greatest speed measured every three seconds while in the Continuous mode will be stored in memory. This mode is useful for storing the peak speed of 10 different readings.

Fast Mode: In the Fast mode, the speed measured every 0.066sec will be stored in memory. This mode is useful for recording an object's speed at different points along its trajectory or path. For example the speed of an object traveling approximately 70mph will be measured and stored every 0.066sec, approximately every 6 feet. In this mode TruSpeed will record the speed of a baseball traveling approximately 70mph every 6 feet from the pitcher's mound to home plate. Speeds of objects moving faster than 70mph will be recorded at increments greater than 6 feet and speeds of objects moving slower than 70mph will be recorded at increments less than 6 feet. This mode is also ideal for measuring the acceleration of a car, above 15mph. The Fast mode is best used in conjunction with the Trigger mode. After the Trigger button is pressed and while in the Trigger mode, the fastest speed detected in the succeeding 3 second interval will be displayed and the first 10 speeds measured every 0.066sec above 15mph will be stored in memory.

Momentary Buttons

Trigger Button: The Trigger button is used while in the Trigger mode to signal TruSpeed to begin its measurement. When the Trigger button is pressed and when TruSpeed is in the Trigger Mode the greatest speed measured above 15mph will be displayed. Note: the Trigger button should not be pressed while in the Continuous mode, it may introduce an error into the current measurement.

Recall Button: When pressed in any mode TruSpeed will display the 10 readings stored in memory, with the most recent reading first, as signified by the "M". TruSpeed can be taken out of the Recall mode, by pressing the Recall button.

Proper Use:

Accuracy: The unit is a highly precise instrument whose maximum internal error with proper use is ± 0.4 mph. TruSpeed rounds off to the nearest mph. The two main sources of error that the user should be aware of are angular errors and vibration errors.

Angular Errors: As with all Doppler radars the velocity determined by TruSpeed is a function of the angle between the TruSpeed beam and the path of the object. If TruSpeed is pointed directly at the path of the object there will be no angular error. When angles less than 10 degrees occur between the TruSpeed beam and the target, the angular error will be less than 1%. The percentage error increases rapidly, as the angle increases, such that at 90 degrees the measured speed would be "zero". Note: a speed of "zero" will not be displayed.

Vibrational Errors: The unit works by transmitting a 10.525GHz (10,525,000,000Hz) signal and measuring the Doppler shift, which for an object moving 1mph is 31Hz. Any vibrations or movement of TruSpeed can cause the transmitted frequency to shift and induce an error. Therefore, it is very important that TruSpeed be held steady.

Interference Errors: Inaccurate readings may occur, if TruSpeed is located near or directed at sources of electromagnetic radiation including cellular phones, microwave ovens, fluorescent lights, etc. Relocation and or repositioning of the TruSpeed unit away from the source of interference should minimize errors.

Accuracy of the unit can be verified through use of a tuning fork. The tines of the tuning fork vibrate at a predetermined speed. To test the unit, tap the tines against a hard plastic or wooden surface and place the tuning fork in front of TruSpeed. A speed will be displayed, which should be compared to the speed marked on the tuning fork to determine accuracy. The displayed speed should be no greater than one mph different from the speed marked on the tuning fork. Note: if the tuning fork is damaged, i.e. it has nicks or other marks its frequency may have been changed. Tuning forks can be obtained through Speed Products Inc.

Care, Cleaning and Storage: The TruSpeed radar gun was designed to be used indoors and outdoors, able to withstand temperature variations. For optimum use, Speed Products Inc. recommends the following:

Do not spill food, beverages or other liquids on the unit.

Do not hit, throw, or drop the unit.

Do not store the unit in very hot, humid or dusty areas.

Do not leave the unit outdoors in inclement weather.

Do not open the unit. This will also void the warranty.

To clean, wipe unit with a soft, clean, damp cloth.

Do not use any cleaning solution of solvents.

Warranty:

Speed Products Inc. guarantees that the TruSpeed Radar Gun to be free from defects in material and workmanship and to operate within specifications for a period of one year from date of purchase. During this period your TruSpeed Radar Gun will either be repaired or replaced (at Speed Product's option) without cost to the owner provided it is returned to the manufacturer.

To activate the warranty on the TruSpeed unit, the purchaser must return the enclosed registration card within 30 days of purchase.

To return a unit for repair/replacement the unit must be securely packaged, preferably in its original packing material. Include a note describing the malfunction which needs correction and ship the unit to :

Speed Products Inc.
Suite 402 3587 Hwy 9
Freehold, NJ 07728

Shipping charges to the manufacture are the responsibility of the owner. Speed Products Inc. will pay the return shipping charges.

If a problem occurs with a unit out of warranty, a written estimate can be obtained for a diagnostic charge of \$30.00. If Speed Products Inc. is then requested to perform the work, there will be no charge for the estimate.

Warranty Registration-TruSpeed

Purchased By: _____
Address: _____
City, State: _____

Date of Purchase: _____