

## PLT-5000 Handheld Laser Tachometer



## 9.0 Warranty

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## 1.0 INTRODUCTION

The PLT-5000 Pocket Laser Tachometer accurately measures RPM and Surface Speed using contact or non-contact measurement techniques. This battery-powered unit is extremely compact for convenient portable use and is supplied in a rugged and attractive plastic housing that is ergonomically designed for optimum comfort.

When measuring RPM in the non-contact measuring mode, the PLT-5000 emits a precision laser beam that is aimed at a small piece of reflective tape, which is affixed to the rotating target.

The PLT-5000 is extremely easy to operate and quickly converts from non-contact operation to contact operation by screwing the contact adapter in place. In addition to RPM's, a wide variety of engineering units for surface speed and length are user-selected via the front panel buttons. Units include; feet per minute, meters/min, yards per minute, inches per minute and more.

A built-in memory stores up to 10 measurements plus minimum, maximum, average and last.

### Safety Precautions

#### WARNING: Do Not Stare Into The Laser Beam



Wear proper safety glasses that are rated for 650 nm for protection against the laser.



Do not use an extension shaft when using the master wheel, as the wheel may come off and cause damage or injury.



Although the PLT-500 can achieve higher measurements, for safety reasons, the master wheel has a maximum speed limitation of 5,000 ft/min.

**NOTE:** The tachometer may be damaged if liquid leaks from the batteries. This may happen if the batteries are left inside the tachometer's enclosure for long periods of time. Remove the batteries after using the tachometer, and store them in the carrying case.

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## 8.0 SPARE PARTS

Part Number	Description
010049	Cone Adapter, standard
010053	Funnel Adapter, standard
010055	Master Wheel FPM (6" circumference)
010059	Reflective Tabs (1/2" square) – 35 pieces
010019	Contact Adapter

## 7.0 SPECIFICATIONS

<b>Display</b>	5 Digit, 0.47" (12mm)
<b>RPM Measuring Range</b>	
<i>Non-contact (rpm)</i>	6.0 – 99,999
<i>Contact (rpm)</i>	6.0 – 20,000 (limited for safety reasons)
<b>Surface Speed</b>	Contact only, using 6" wheel
<i>Meter/min</i>	1.0 – 3,809.8
<i>Yards/min</i>	1.0 – 4,166.4
<i>Inches/min</i>	36 – 99,999
<i>Feet/min</i>	3.0 – 12,499
<b>Length</b>	Contact only, using 6" wheel
<i>Meter</i>	0.2 – 99,999
<i>Yards</i>	0.2 – 99,999
<i>Feet</i>	0.5 – 99,999
<b>Total revolutions</b>	1 – 99,999
<b>Accuracy</b>	
<i>Revolution</i>	6.0 – 599.9 rpm $\pm 1$ rpm
<i>Surface Speed</i>	0.4% and $\pm 1$ digit
<i>Length</i>	0.4% and $\pm 1$ digit
<b>Memory function</b>	14 readings stored in memory & retained for 5 minutes
<b>Update time</b>	1 second
<b>Detection</b>	Laser diode
<b>Auto POWER OFF</b>	5 minutes
<b>Batteries</b>	3 AA (1.5 volt), included
<b>Operating temp.</b>	32–113 °F (0– 45 °C)
<b>Construction</b>	ABS plastic
<b>Weight</b>	
<i>Main unit:</i>	6 ounces. (160 g), including batteries
<i>Contact adapter:</i>	0.11 lb. (50 g)
<b>Dimensions</b>	
<i>Main unit</i>	4.55" L x 2.52" W x 1.24" H (115.5mm x 64mm x 31.5mm) 149mm (Length with contact adapter)
<b>Accessories</b>	Gauge, Cone adapter, Funnel adapter, 6" circumference wheel, NIST Certificate, Operating manual, Reflective tape (35 pieces), Contact adapter, Three (3) AA batteries

## 2.0 OVERVIEW OF GAUGE

### 2.1 Gauge



### 2.2 Contents of Kit

Gauge  
Cone adapter,  
Funnel adapter,  
6" circumference wheel  
NIST Certificate  
Operating manual,  
Reflective tape (35 pieces),  
Contact adapter (*not shown*)  
Three (3) AA batteries



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## 3.0 OPERATION

### 3.1 Non-Contact Measurements

#### Measuring revolutions per minute or total revolutions.

1. Attach a piece of reflective tape on the object to be measured.\*
2. Press the POWER button on the side at the tachometer, the LCD display will turn on.
3. Select “rpm” or “REV” depending on whether you wish to measure revolutions per minute or total number of revolutions by pressing the UNIT button.
4. Aim the laser beam outlet at the tape on the rotating object to be measured.
5. Press and hold down the POWER button to start measuring.  
**Note:** If the measuring range of the tachometer is exceeded, “OVR” will appear on the tachometer’s display.
6. Press and hold the POWER button to take another measurement.

\* Before attaching the reflective tape, remove any water or oil from the surface of the rotating object, so that the reflective tape will stick evenly. If the rotating object to be measured is smaller than the piece of reflective tape, do not attach the reflective tape. If the rotating object to be measured is shiny, put some black tape on it or paint it black and then attach the reflective tape.

**Caution:** Never look into or point the laser beam into anyone’s eyes.  
This could cause serious eye injury.

### 3.2 Contact Measurements

#### Measuring rotation speed using the funnel adapter.

1. Be careful not to over tighten the contact adapter as you attach it to the tachometer.
2. Select the cone or funnel adapter and slide it onto the shaft of the contact adapter (installed in previous step). Align the notch in the cone/funnel adapter with the alignment pin on the shaft of the contact adapter.
3. Press the POWER button on the side of the tachometer, the LCD display will turn on.

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## 6.0 TROUBLESHOOTING

### If the laser beam cannot be seen:

- Check that the POWER switch is in the ON position and operating properly.
- Check that the batteries are functioning properly. Confirm that they are inserted in the battery compartment with the correct polarity.

### If the gauge produces inaccurate measurement results:

- Highly reflective surfaces may need to be painted darker to create more contrast between the reflective tape and the background.
- Check that laser beam is hitting the reflective tape. It may be necessary to use a larger taped area.
- The minimum measuring distance for non-contact measurements is 12.7 cm. If the measuring distance is too short inaccurate measurements may result

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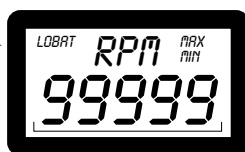
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## 5.0 BATTERY REPLACEMENT

When "LO BAT" flashes on the display, use the following procedure to install new batteries:

1. Slide off the battery cover located on the rear of the tachometer.
2. Remove the old batteries and insert three new AA batteries while observing proper polarity.
3. Slide the battery cover back into position (dispose of old batteries properly).

**Note:** Do not mix old and new batteries.



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4. Select "RPM" or "REV" depending on whether you wish to measure revolutions per minute or total number of revolutions by pressing the UNIT button.
  5. Press and hold down the POWER button to start measuring
  6. Bring the contact probe into contact with the object to be measured by touching the contact probe slowly to the center of the rotating object.

**Note:** If the measuring range of the tachometer is exceeded, "OVR" will appear on the tachometer's display.

7. Press and hold the POWER button to take another measurement.
8. To convert the units of measurements between ranges, simply press the UNIT button.
9. The POWER will automatically turn off after five minutes if there are no additional measurements made.

**Caution:** When a high-speed rotating object is measured for hours using a cone or funnel-shaped contact probe the surface of the probe in contact with the object may become very hot.

### Measuring surface speed and distance using the 6" circumference wheel.

1. Be careful not to over tighten the contact adapter as you attach it to the tachometer.
2. Attach the 6" circumference wheel to the contact adapter insuring that the alignment pin on the shaft of the contact adapter is securely aligned with the notch of the 6" circumference wheel.
3. Press the POWER button on the side at the tachometer, the LCD display will turn on.
4. Select meters/minute (m/M), yards/minute (Y/M), inches/minute (I/M), feet/minute (F/M), meters [m], yards (YRd), feet (FT), or inch (IN) depending on which units you wish to measure.

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5. Bring the 6" circumference wheel into contact with the object to be measured by slowly touching the contact wheel to the moving object.
  6. Press and hold down the POWER button to start measuring.
  7. Release the POWER button to stop measuring.
  8. To convert the units of measurements between ranges, simply press the UNIT button.

**Caution:** When making surface speed or distance measurements, insure that the 6" circumference wheel's perimeter is parallel to the object to be measured. Do not push the wheel against the object with great force.

**Note:** When using the master wheel, accuracy can be affected as much as 0.3% of reading.

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## 4.0 MEMORY FUNCTION

This PLT-5000 stores minimum, maximum, average, last measurement, and up to ten operator selected measurements in memory.

### 4.1 To store readings in memory

1. The PLT-5000 automatically stores minimum, maximum and last measurements.
2. Ten measurements can be programmed into memory by pressing and holding the POWER button, while pressing the MEM button to store the displayed reading (M1, M2, ... M10)
3. The average value of sequentially stored measurements, up to ten, can be viewed by pressing the MEM button.

**Note:** If the MEM button is not selected while the POWER button is pressed the measurement will not be recorded into memory. The memory will be recorded automatically into memory if the measurement made is the maximum, minimum or last measurement.

### 4.2 To delete stored measurements do one of the following:

1. Press and hold the MEM button for five seconds or more. The display will read (CCCCC) and all stored readings will be erased.
2. Change the units of measurements and then make additional measurements.
3. After five minutes of non-use, the gauge will automatically switch off and all stored readings will be erased.