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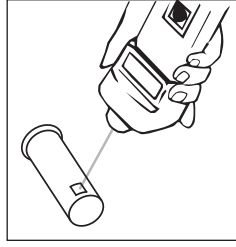
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## 1.0 INTRODUCTION

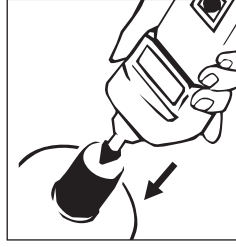
The DT-205L and DT-207L Hand-Held Digital Tachometers are combination models designed for Contact as well as Non-Contact operation. They employ a precise Optical Laser System that permits measurement of RPM from up to 14 feet away when operating in the Non-Contact mode and is supplied with a Screw-In Contact Adapter for measuring RPM, Surface Speed & Length in the Contact operating mode. Rotational speed is displayed in RPM units (revolutions per minute) while the surface speed and length can be displayed in a variety of user-selected engineering units.

When operating in the Non-Contact mode a small piece of reflective tape must be affixed to the rotating shaft or other rotating element. Refer to Operating Procedure

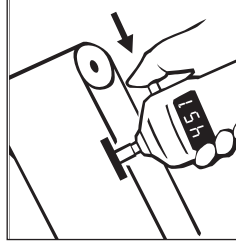
Non-Contact RPM



Contact RPM



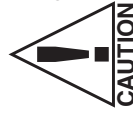
Surface Speed & Length



## 10.0 SPECIFICATIONS

<b>Models</b>	DT-205L (LCD version) DT-207L (LED version)
<b>Measuring Range</b>	Non-Contact: 6 to 99,999 rpm Contact : 0.8 to 25,000 rpm
<b>Accuracy</b>	6 to 8,299 rpm: $\pm 1$ rpm 8,300 to 24,999 rpm: $\pm 2$ rpm 25,000 to 99,999 rpm: $\pm 0.006\%$ rpm
<b>Display</b>	DT-205L (LCD MODEL) 5 digit 0.47" (12mm) high LCD DT-207L (LED MODEL) 5 digit 0.4" (10mm) high LED
<b>Measuring Units</b> <i>per Minute</i> <i>Total Length</i>	Revolutions, Meters, Yards, Feet, Inches Meters, Yards, Feet, Inches
<b>Measuring Distance</b>	14 feet (5.2 m) maximum
<b>Detection</b>	Laser Diode, Class II
<b>Memory</b>	13 readings are stored in memory and retained for 5 minutes (last, max., min., and 10 measurements)
<b>Over-Range Indicator</b>	Flashing numerals
<b>Update Time</b>	1 second (typical)
<b>Batteries</b>	2 (1.5 V AA)
<b>Battery Life</b>	DT-205L: Approx 40 hrs DT-207L: Approx 25 hrs
<b>Operating Temp</b>	32° to 113° F (0 to 45° C)
<b>Construction</b>	Die-cast aluminum housing
<b>Weight</b>	0.8 pounds (365 grams)
<b>Dimensions</b>	6.6" L x 2.4" W x 1.8" H (167mm x 61mm x 45.7mm)
<b>Warranty</b>	1 year

**Do not point the laser beam into eyes as permanent damage could result.**



## 9.0 RANGE AND ACCURACY

Model		DT-207L	
<b>R: Revolutions</b>	<b>Single Range</b>	<b>Accuracy</b>	<b>Resolution</b>
Non-Contact RPM (rev./min.)	6 – 8,300 8,300 – 25,000 25,000 – 99,999	±1 ±2 ±0.006% of reading ±1 digit (or ±6 RPM max.)	1
Contact RMP (rev./min.)	0.8 – 9,999.9 10,000 – 25,000	±0.6% ±0.006% of reading ±1 digit (or ±2 RPM max.)	0.1 1
<b>F: Feet</b>	<b>Single Range</b>	<b>Accuracy</b>	<b>Resolution</b>
F/M (feet/min.)	0.4 – 9,999.9 10,000 – 12,500	±0.6% ±1	0.1 1
FT (feet)	0.10 – 999.99 1,000 – 9,999.9 10,000 – 99,999		0.01 0.1 1
<b>Y: Yards</b>	<b>Single Range</b>	<b>Accuracy</b>	<b>Resolution</b>
Y/M (yards/min)	0.13 – 999.99 1,000.0 – 4,167.0	±0.06 ±0.3	0.01 0.1
Y/Rd (length)	0.02 – 999.99 1,000.0 – 9,999.9 10,000 – 99,999		0.01 0.1 1
<b>I: Inches</b>	<b>Single Range</b>	<b>Accuracy</b>	<b>Resolution</b>
I/M (inches/min.)	5 – 99,999	±0.006% of reading ±1 digit (or ±6 RPM max.)	1
IN (length)	1.0 – 9,999.9 10,000 – 99,999		0.1 1
<b>m: Meters</b>	<b>Single Range</b>	<b>Accuracy</b>	<b>Resolution</b>
m/M (meters/min.)	0.11 – 999.99 1,000.0 – 3,810.0	±0.06 ±3	0.01 0.1
m (length)	0.02 – 999.99 1,000.0 – 9,999.9 10,000 – 99,999		0.01 0.1 1

**Note:** When using the 6" master wheel, accuracy can be affected as much as 0.3% of reading

Although the tachometer alone is able to achieve the above ranges, the master wheel has a maximum speed limitation of 5,000 FPM (for safety reasons)



## 2.0 OVERVIEW



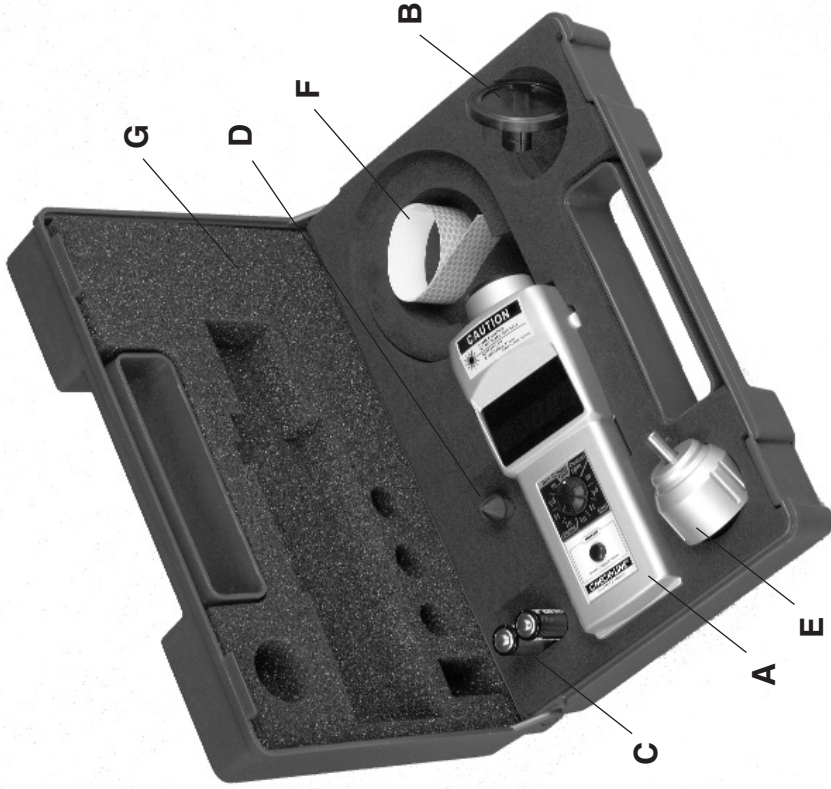
LCD Display on DT-205L



LED Display on DT-207L



### 3.0 CONTENTS OF COMPLETE KIT



- A. Tachometer
  - B. Surface Speed Wheel
  - C. Batteries (2 pcs. x AA)
  - D. Cone Tip Adapter
  - E. Screw-In Contact Adaptor
  - F. Reflective Tape
  - G. Carrying Case
- Not shown — Instruction manual stored behind foam

### 8.0 BUILT-IN MEMORY SYSTEM

The DT-205L and DT-207L include an automatic built-in memory system capable of storing the Last, Maximum and Minimum readings for recall to the display. These values are stored automatically and there is no need to press any buttons to store data.

**Note:**

- When utilizing the Length Measurement functions, only the Last reading is retained in the display.
- The stored data will be deleted when the Tachometer automatically powers off.

#### **Recall Stored Readings**

To recall stored readings to the display, press the Memory Switch. A stored value will alternately flash on the display along with the memory location number (1, 2 ...10).

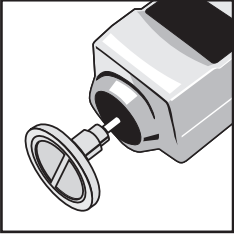
#### **Clearing Stored Readings**

To erase all stored readings, press and hold the Memory Switch for five (5) or more seconds until the display shows “CCCCC.” This indicates that the memory was successfully erased.

## 7.0 MEASURING SURFACE SPEED & LENGTH

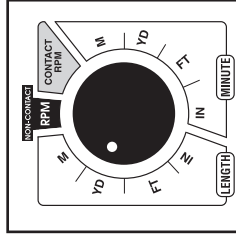
1. Select the Surface Speed Wheel and carefully place it on the shaft of the Screw-in Contact Adapter making sure to align the pin on the shaft with the slot on the wheel.

**Warnings:** The *Shaft Extension Accessory* should not be used with the *Surface Speed Wheel*.

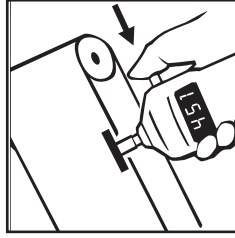


2. Rotate the *Operating Mode Selector Switch* to the desired unit of measure for surface speed or length.

*Select Desired Unit Of Measure  
For Surface Speed or Length*



3. Position the wheel carefully on the moving surface. Apply enough pressure to eliminate any slip.

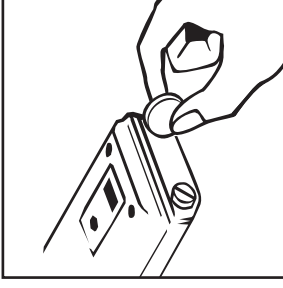


4. Press and hold the *white Measure Button* located on the right side of the Tachometer.
5. The display will update approximately 1 time per second and show the measured surface speed or length in the units selected in the *Operating Mode Selector Switch*.
6. Release the *Measure Button* prior to removing the Tachometer from the rotating shaft. The last reading will be retained on the display.

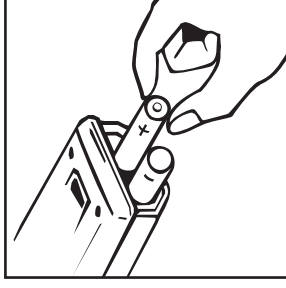
Readings will be retained in memory for 5 minutes. This time can be extended indefinitely by re-pressing the *Memory Switch* within each five minute period.

## 4.0 INSTALLING/REPLACING BATTERIES

1. Loosen the two black screws at the bottom edge of the tachometer using a slotted screwdriver or coin.



2. Remove the battery compartment cover plate exposing the battery sleeve.



3. Insert the AA batteries observing the proper battery polarity indicated on a label inside the battery compartment

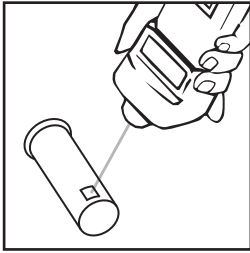
**Note:** The DT-205L and DT-207L are designed to automatically power off after five (5) minutes of "non-use" to conserve battery power.

## 5.0 MEASURING RPM - Non-Contact Mode

1. Place a small piece of Reflective Tape (included) on the shaft or rotating element (disc, pulley, etc.).

### Notes On Measurements:

- If the rotating element is highly reflective, it may be necessary to paint it a darker color in order to ensure reliable results.
  - If the sensing distance to the object is less than 5 inches (127 mm), Reflective Tabs (optionally available) should be used instead of the Reflective Tape included with the instrument.
2. Aim the Tachometer at the target (Reflective Tape) keeping the Tachometer at least 5" (127 mm) but no more than 14 Feet (4.3 meters) away from the reflective target.



3. Press and hold the Measure Button for several seconds to observe the display as it changes in accordance with the speed of the shaft or rotating element. As soon as the laser beam hits the target, the Tachometer will begin displaying speed measurements.

If the laser beam is properly aligned with the target, an "on target" indicator will be shown on the display.

DF-205L: "RPM" Indicator flashes on and off

DF-207L: "Red Dot" flashes on and off

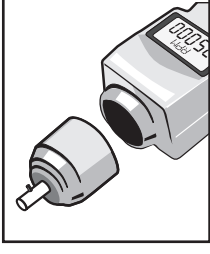
If the above indicators are not flashing, then the beam is not correctly aligned with the reflective tape.

4. Release the Measure Button prior to removing the Tachometer from the rotating shaft. The last reading will be retained on the display.

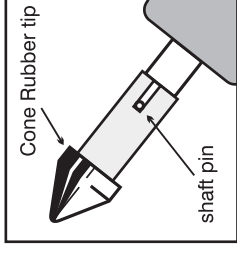
Readings will be retained in memory for 5 minutes. This time can be extended indefinitely by re-pressing the Memory Switch within each five minute period.

## 6.0 MEASURING RPM— Contact Mode

1. Screw in the Contact Adapter on to the front of the unit.

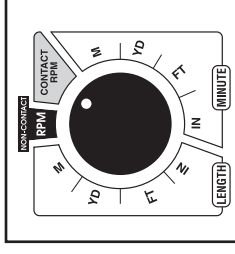


2. Select either the Cone Tip Adapter or the Funnel Tip Adapter and carefully place it on the shaft of the Screw-in Contact Adapter making sure to align the pin on the shaft with the slot on the adapter.

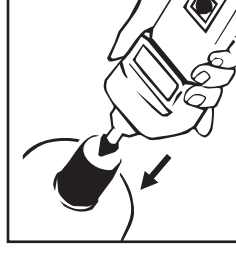


**Note:** The shaft extension accessory can be used to help reach the end of the shaft, however, under no circumstances should this extension be used with the Surface Speed Wheel.

3. Rotate the Operating Mode Selector Switch to Contact RPM.



4. Position the tip carefully on the end rotating shaft insuring that it is positioned in the center of the shaft. Apply enough pressure to eliminate slip.



5. Press and hold the white Measure Button located on the right side of the Tachometer.
6. The display will update approximately 1 time per second and show the measured rotational speed in RPM.
7. Release the Measure Button prior to removing the Tachometer from the rotating shaft. The last reading will be retained on the display.

Readings will be retained in memory for 5 minutes. This time can be extended indefinitely by re-pressing the Memory Switch within each five minute period.

**CHECKLINE®**  
BY ELECTROMATIC

Hand Held

# DIGITAL TACHOMETER

Model DT-205L and DT-207L



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