

# Instruction Manual for

## Pocket Tachometer (Laser Non-Contact/Contact) Model MT-200



Congratulations on the purchase of our MT-200 contact tachometer. We trust you will enjoy many years of professional results from your product.

Please read the entire instruction manual thoroughly before initial set-up and operation; the information contained herein will aid you in operating your MT-200 safely and with excellent results.

### INSPECTION/STANDARD ACCESSORIES

If upon delivery shipping damage is detected, do not operate the tachometer. Notify shipping carrier immediately for damage claim instructions. Refer to nameplate and record the serial number for future reference.

Items included with the MT-200:

- Carrying case
- 3 manganese AA batteries
- Cone adapter & Contact adapter
- Funnel adapter
- 6" circumference wheel
- NIST certificate
- Instruction manual
- Reflective tape (35 pieces)



### FEATURES AND BENEFITS

The MT-200 tachometer incorporates the latest microprocessor technology and offers:

- Multiple measurement types: total revolutions (rev); revolutions per minute (rpm); surface speed: m/min, y/min, in/min, ft/min; and length: meters, yards, feet and inches.
- Compact, pocket-size design
- Non-contact rpm measurements up to 60cm away.
- Contact measurements with included contact adapter
- 14 reading memory: minimum, maximum, final, 10 selectable measurements and an average of memory measurements, up to ten.
- Efficient design; long battery life and continuous operation.
- Automatic conversion of units.

### IMPORTANT SAFETY INSTRUCTIONS



Laser radiation may be harmful to the human eye. Avoid direct exposure of human eyes to laser light. Eye damage can result.

Never point the unit at another person. Keep out of the reach of children.

Avoid indirect exposure via reflective materials such as glass and mirrors.



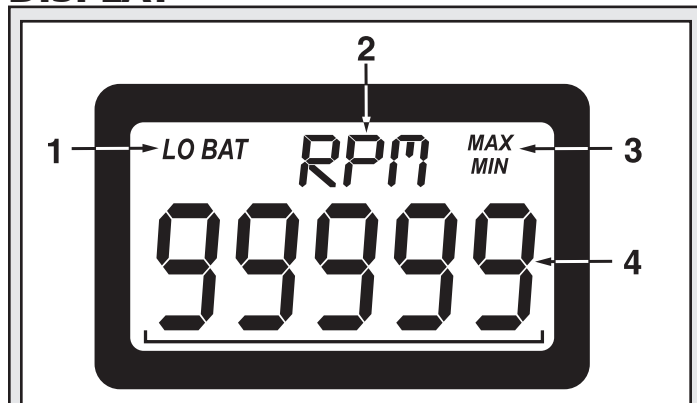
When power button is depressed, laser is active.

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



Although the tachometer is able to achieve higher measurements than what is listed, the master wheel has a maximum speed limitation of 5000 ft/min (for safety reasons).

### DISPLAY



1. Low battery display
2. Tachometer's display
3. Max/Min display
4. Main display

# OPERATION

## Non-Contact Measurements

Measuring revolutions per minute or total revolutions.

1. Attach a piece of reflective tape on the object to be measured.

*NOTE: Accurate measurement may not be achieved if the rotating object to be measured is shiny. Cover with black tape or paint then attach the reflective tape.*

2. Press the POWER button to turn the tachometer on.
3. Select RPM (revolutions per minute) or REV (total number of revolutions) by pressing the UNIT button.
4. Aim the laser beam at the reflective tape.
5. Press and hold down the POWER button to start measuring.
6. Press and hold the POWER button to take another measurement.



Laser - Do not look into the beam. Use protective eyeglasses that are rated for 670usec for adequate eye protection.

## Contact Measurements

Measuring rotation speed using the cone or funnel-shaped contact probe.

1. Attach the contact adapter to the tachometer. Do not over tighten.
2. Attach the cone or funnel adapter to the tachometer by placing on the adapter shaft. Align the shaft pin with the notch of the adapter stem.
3. Press the POWER button to turn the tachometer on.
4. Select RPM (revolutions per minute) or REV (total number of revolutions) by pressing the UNIT button.
5. Press and hold 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. 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. Press the UNIT button to convert between ranges.



When a high-speed rotating object is measured for hours using a cone or funnel adapter the surface of the adapter may become very hot.

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

1. Attach the contact adapter to the tachometer. Do not over tighten.
2. Attach the 6" circumference wheel to the tachometer by placing the wheel on the adapter shaft. Align the shaft pin with the notch of the wheel stem.

3. Press the POWER button to turn the tachometer 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.
5. Bring the 6" circumference wheel into contact with the object to be measured by slowly touching the wheel to the moving object.
6. Press and hold the POWER button to start measuring.
7. Press the UNIT button to convert between ranges.



When making surface speed or distance measurements, ensure that the 6" circumference wheel's perimeter is parallel to the object to be measured.

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

## Memory Function

The tachometer's memory capabilities are as follows:

1. Minimum, maximum and last measurements are recorded automatically by the tachometer.
2. Ten selectable measurements can be programmed into memory by pressing the MEM button while the POWER button is fully depressed (M1, M2, M3, ... M10).
3. The average value of sequentially stored memory, up to ten, can be viewed by pressing the MEM button.

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

To delete stored memories do one of the following:

1. Press the MEM button for five seconds or more. All memory will be erased after [CCCCC] is displayed.
2. Changing the units of measurements and then making additional measurements.
3. Memory will be automatically erased if the tachometer turns off automatically after five minutes.

## Battery Replacement

When "LO BAT" flashes on the display, install new batteries.

To replace the batteries:

1. Slide open the battery cover (located on the rear of the tachometer).
2. Remove old batteries and insert three fresh AA size batteries, observing proper polarity. Do not mix old and new batteries.
3. Slide the battery cover back into place.



# TROUBLESHOOTING

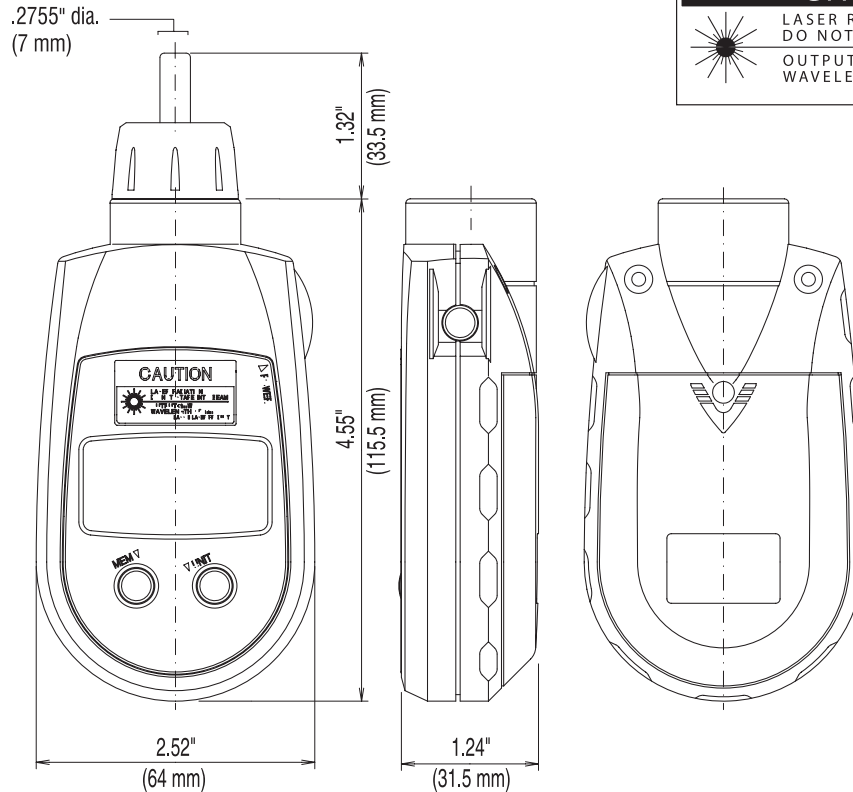
No laser beam is evident:

- Confirm that the **POWER** button is operating properly.
- Confirm that the batteries are functioning properly and that they are inserted into the tachometer with correct polarity.

Inaccurate measurement results:

- If the surface being measured is highly reflective, it may need to be painted darker to ensure that the tachometer can distinguish between the reflective tape and the background.
- The laser beam may not be hitting the reflective tape, or the taped area may be too small.
- Measuring distance may be too short. The minimum distance for non-contact measurements is 12.7cm

# DIMENSIONS AND SPECIFICATIONS



**CAUTION**

LASER RADIATION  
DO NOT STARE INTO BEAM

OUTPUT < 1mW  
WAVELENGTH 670nm

CLASS II LASER PROJECT

SPECIFICATIONS	
<b>MODEL</b>	<b>MT-200</b>
<b>Display</b>	5 digit 0.47"(12 mm) height LCD
<b>Revolutions per Minute (RPM)</b>	Non-Contact: 6.0 - 99,999    Contact: 6.0 - 25,000
<b>Surface Speed (Using 6" Wheel)</b>	<b>m/min:</b> 0.1 - 3,809.8 <b>yards/min:</b> 1.0 - 4,166.4 <b>inch/min:</b> 36 - 99,999 <b>feet/min:</b> 3.0 - 12,499
<b>Length (Using 6" Wheel)</b>	<b>m:</b> 0.2 - 99,999 <b>yards:</b> 0.2 - 99,999 <b>feet:</b> 0.5 - 99,999
<b>Total number of revolutions (rev)</b>	1 - 99,999
<b>Measuring Accuracy</b>	<b>Revolution:</b> 6.0 - 599.9 rpm: ±1 rpm, 600 - 99,999 rpm: ±0.006% and ±0.5 digit <b>Surface Speed, Length:</b> 0.4% and ±1 digit
<b>Memory function</b>	14 readings are stored in memory and retained for 5 minutes (Last, Max., Min., Average, and 10 selectable measurements)
<b>Update Time</b>	1 second
<b>Detection</b>	Laser diode
<b>Auto POWER Off function</b>	5 minutes
<b>Batteries Included</b>	3 AA 1.5V
<b>Low Battery Indicator</b>	Flashing "LO BAT" display
<b>Over Range Indicator</b>	Flashing "OVR" display
<b>Operating Temperature</b>	32-113°F (0 - 45°C)
<b>Construction</b>	ABS resin
<b>Outside dimensions</b>	4.55"L x 2.52"W x 1.24"H (115.5 mm x 64 mm x 31.5 mm) (main unit) Overall length (When a correct adapter is installed): 149mm
<b>Weight</b>	Main unit: 0.35-lb (160 g)(including batteries)    Contact adapter: 0.11lb (50 g)
<b>Accessories</b>	Carrying case, cone adapter, funnel adapter, master wheel (6" cir.), contact adapter, 35 reflective tabs, NIST certificate, operation instructions

## **WARRANTY**

**LIMITED EXPRESS WARRANTY:** The manufacturer warrants, to the original purchaser of new products only, that this product shall be free from defects in workmanship and materials under normal use and proper maintenance for one year from the date of original purchase. This warranty shall not be effective if the product has been subject to overload, misuse, negligence, or accident, or if the product has been repaired or altered outside of the manufacturer's authorized control in any respect which in the manufacturer's judgment, adversely affects its condition or operation.

**DISCLAIMER OF ALL OTHER WARRANTIES:** The foregoing warranty constitutes the SOLE AND EXCLUSIVE WARRANTY, and the manufacturer hereby disclaims all other warranties, expressed, statutory or implied, applicable to the product, including, but not limited to all implied warranties of merchantability and fitness.

**LIMITATION OF REMEDY:** Under this warranty, the manufacturer's SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE the defective product or part, at the manufacturer's option. The manufacturer reserves the right to satisfy warranty obligation in full by reimbursing Buyer for all payments made to the manufacturer, whereupon, title shall pass to the manufacturer upon acceptance of return goods. To obtain warranty service, Purchaser must obtain the manufacturer's authorization before returning the product, properly repackaged, freight pre-paid to the manufacturer.

**INDEMNIFICATION & LIMITATION OF DAMAGES:** Buyer agrees to indemnify and hold the manufacturer harmless from and against all claims and damages imposed upon or incurred arising, directly or indirectly, from Buyer's failure to perform or satisfy any of the terms described herein. In no event shall the manufacturer be liable for injuries of any nature involving the product, including incidental or consequential damages to person or property, any economic loss or loss of use.

**MERGER CLAUSE:** Any statements made by the Seller's representative do not constitute warranties except to the extent that they also appear in writing. This writing constitutes the entire and final expression of the parties' agreement.

All rights reserved. Product specifications are subject to change without notice.