

INSTRUCTION MANUAL

3403,3404

TACHO HiTESTER

HIOKI E. E. CORPORATION

Contents

Introduction	1
Inspection	1
Safety Notes	2
Notes on Use	6
Chapter 1 Overview	9
1.1 Product Overview	9
1.2 Names and Functions of Parts	10
Chapter 2 Measurement Method	13
2.1 Measurement Preparations	13
2.2 Normal Measurement	15
2.3 MAX Hold Measurement (3404 only)	16
2.4 MIN Hold Measurement (3404 only)	17
2.5 TOTAL Measurement (3404 only)	18
2.6 PERIOD Measurement (3404 only)	20
2.7 FAST/SLOW Mode Measurement (3404 only)	22
2.8 Data Hold	23
2.9 Buzzer Off Set	24
Chapter 3 Precautions	25
Chapter 4 Analog Output (3404 only)	27
Chapter 5 Measurement with 9213 CONTACT ADAPTER	31

Chapter 6 Specifications	33
Chapter 7 Maintenance and Service ...	39
7.1 Battery Replacement	39
7.2 Maintenance	40
7.3 Service	40

Introduction

Thank you for purchasing the HIOKI 3403,3404 TACHO HiTESTER. To obtain maximum performance from the product, please read this manual first, and keep it handy for future reference.

Inspection

When you receive the product, inspect it carefully to ensure that no damage occurred during shipping. If damage is evident, or if it fails to operate according to the specifications, contact your dealer or Hioki representative.

Safety Notes




DANGER

This instrument is designed to conform to IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the instrument. Be certain that you understand the instructions and precautions in the manual before use. We disclaim any responsibility for accidents or injuries not resulting directly from product defects.





This manual contains information and warnings essential for safe operation of the instrument and for maintaining it in safe operating condition. Before using the instrument, be sure to carefully read the following safety notes.

Safety symbols



- The  symbol printed on the instrument indicates that the user should refer to a corresponding topic in the manual (marked with the  symbol) before using the relevant function.
 - In the manual, the  symbol indicates particularly important information that the user should read before using the instrument.
-

The following symbols in this manual indicate the relative importance of cautions and warnings.

 DANGER	Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.
 WARNING	Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.
 CAUTION	Indicates that incorrect operation presents a possibility of injury to the user or damage to the instrument.
 NOTE	Advisory items related to performance or correct operation of the instrument.

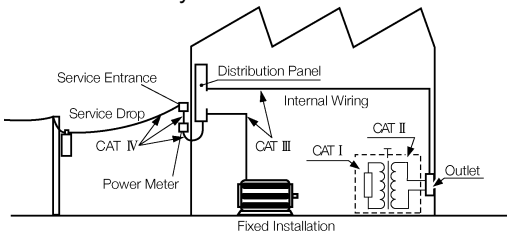
Overvoltage Categories

This product conforms to the safety requirements for CAT I measurement products.

To ensure safe operation of measurement instruments, IEC 60664 establishes safety standards for various electrical environments, categorized as CAT I to CAT IV, and called overvoltage categories. These are defined as follows.

- CAT I: Secondary electrical circuits connected to an AC electrical outlet through a transformer or similar device.
- CAT II: Primary electrical circuits in equipment connected to an AC electrical outlet by a power cord (portable tools, household appliances, etc.)
- CAT III: Primary electrical circuits of heavy equipment (fixed installations) connected directly to the distribution panel, and feeders from the distribution panel to outlets.
- CAT IV: The circuit from the service drop to the service entrance, and to the power meter and primary overcurrent protection device (distribution panel).

Higher-numbered categories correspond to electrical environments with greater momentary energy, so a measurement instrument designed for CAT III environments can endure greater momentary energy than one designed for CAT II. Using a measurement instrument in an environment designated with a higher-numbered category than that for which the instrument is rated could result in a severe accident, and must be carefully avoided.



Accuracy

We define measurement tolerances in terms of f.s. (full scale), rdg. (reading) and dgt. (digit) values, with the following meanings:

f.s. (maximum display or scale value, or length of scale)

Signifies the maximum display (scale) value or the length of the scale (in cases where the scale consists of unequal increments or where the maximum value cannot be defined).

In general, this is the range value (the value written on the range selector or equivalent) currently in use.

rdg. (displayed or indicated value)

This signifies the value actually being measured, i.e., the value that is currently indicated or displayed by the measuring instrument.

dgt. (resolution)

Signifies the smallest display unit on a digital measuring instrument, i.e., the value displayed when the last digit on the digital display is "1".

Notes on Use



Follow these precautions to ensure safe operation and to obtain the full benefits of the various functions.



DANGER

To avoid damage to the products and potentially life-threatening hazards, observe the following precautions:

- Be careful when measuring with the contact adapter because rotation and vibration of the tachometer can produce erratic results with either high or low rotation speeds. Hold the tachometer firmly against the rotator. Do not place the tachometer on a tripod when making measurements.
 - If the contact tip is not fully inserted over the contact adapter shaft, it could fall off the shaft by touching the rotator. Make sure the contact tip is firmly inserted over the adapter shaft before making measurements.
-

 **WARNING**

To avoid damage to the products and potentially life-threatening hazards, observe the following precautions:

- Always use the screw to tighten the contact adapter to the tachometer. If it becomes loose, the tachometer may vibrate or be dislocated and become a hazard.
- When using the contact adapter for measuring, the tachometer is subject to vibration, so measurements should be made only below 20,000 r/min or 333 r/s.
- Use either the specified Hioki 9035 AC ADAPTER or another 300 mA/6 V adapter with 5-mm diameter and negative center contact that complies with IEC 60950 safety standards.

 **CAUTION**

- Do not store or use the product where it could be exposed to direct sunlight, high temperature or humidity, or condensation. Under such conditions, the product may be damaged and insulation may deteriorate so that it no longer meets specifications.
 - To avoid electrical hazards and damage to the product, do not apply voltage exceeding the rated maximum to the output terminals.
-

NOTE

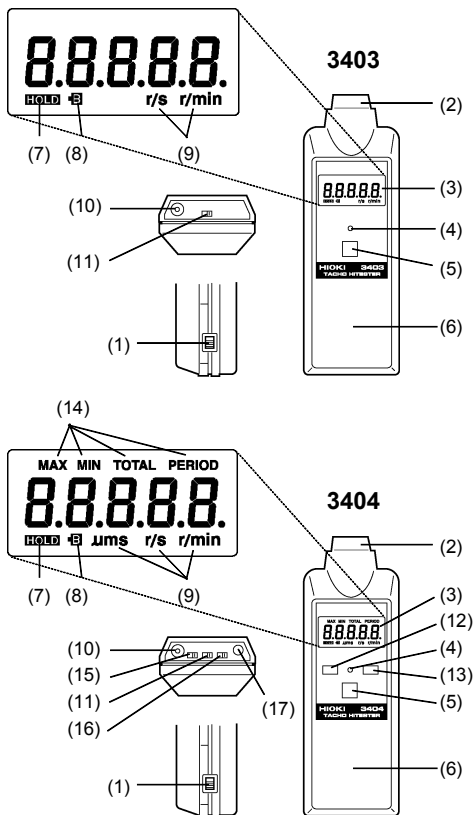
- Depending on the material of the object to be measured or method of touching the contact tip, the measurement error may occur.
 - Do not perform measurements in locations with high humidity or where those are subject to intense ambient light.
 - Avoid scratching or dirtying the two lenses inside the detector window.
 - If the tachometer is not to be used for a long period of time, remove the battery.
 - Do not switch between FAST and SLOW modes when the tachometer is set to the MAX or MIN hold measurement mode. (3404 only)
-

Chapter 1 Overview

1.1 Product Overview

This tachometer is a non-contact, highly portable tachometer that functions by measuring the visible light reflected from reflective tape attached to the object to be measured. It can also be used as a contact type tachometer by attaching the optional 9213 CONTACT ADAPTER, sold separately.

1.2 Names and Functions of Parts




(1) Power switch	Turn to ON for measurement.
(2) Photoelectric Detection Window	Contains the light emitter and receiver devices.
(3) Display	Displays digital values.
(4) Reflected light verification LED	Lights when the tachometer is detecting reflected light.
(5) HOLD switch	Holds the current measured value.
(6) Buzzer	Sounds when reflected light is detected (can be set not to buzz).
(7) HOLD mark	Lights when in a HOLD condition.
(8) Battery low mark	Lights when battery replacement is needed.
(9) Unit symbols	Indicates unit symbols.
(10) AC adapter jack	Used to connect an AC adapter (300 mA/6 V, 5 mm dia)
(11) r/min,r/s switch	Used to select r/min (revolutions per minute) or r/s (revolutions per second).
(12) RESET switch	Resets (initializes) at the measurement mode.
(13) MODE switch	Used to select measurement mode.

(14) MODE symbols MAX MIN TOTAL PERIOD	Holds maximum reading Holds minimum reading Total amount of rotations Period of rotation measurement
(15) FAST/SLOW mode switch	Selects the sampling period.
(16) Analog output range switch	Selects between x 0.1 (mV) and x 0.01 (mV) for r/min measurement and selects between x 10 (mV) and x 1 (mV) for r/s measurement.
(17) OUTPUT terminal	Used to connect a recorder or other equipment with a 9094 OUTPUT CORD.

Chapter 2

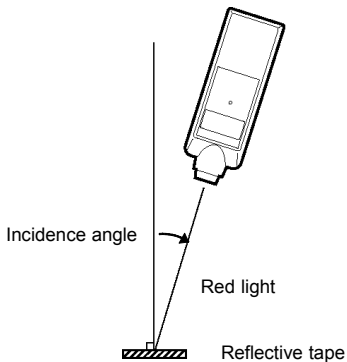
Measurement Method

2.1 Measurement Preparations

1. If this is the first time the tachometer will be used, insert the batteries.
2. Attach the reflective tape to the rotating object.
 - Before attaching the tape, make sure that the surface of the object is free of dirt, grease or dust.
3. Turn on the power switch, and check that all segments of the display light for about one second.
 - If the  mark lights, replace the batteries.
4. Turn the detector window so that the red emitted light faces the reflective tape on the rotating object. If the reflected light is being detected, the buzzer sounds and the LED lights.
 - If the reflectivity of the rotating object itself is high and light is reflected from portions other than the reflective tape, tilt the tachometer to restrict the incident light and obtain a more accurate reading.

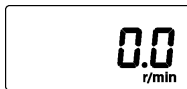
NOTE

The red light from the tachometer shall strike the reflective tape at an incidence angle of 45 degrees or less. If the incidence angle exceeds 45 degrees, the tachometer may not be able to detect the reflected light and may not be able to do measurement.



2.2 Normal Measurement

1. When the power is turned on, the tachometer will automatically enter the normal measurement mode.
2. The speed of rotation of the object will be measured and displayed.
 - The speed of rotation range can be switched between r/min and r/s during measurement. The 3404 can also be switched between FAST and SLOW sampling period.
 - On the 3403, the last digit of the display will be fixed to 0 for counts over 20,000.
 - Analog output on the 3404 will match the displayed value.
 - For speed of rotation measurement under 30 r/min in the 3404 SLOW mode or on the 3403 or for measurement under 120 r/min in the 3404 FAST mode, the display will appear as indicated right.



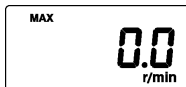
- The display will appear as "-----" for measurement over 100,000 r/min.

NOTE

- When the count exceeds 20,000 on the 3404 in the SLOW mode, the last digit will be fixed to zero, and, in the FAST mode the last two digits will be fixed to zero. This is the same for MIN and MAX hold modes as well.
- During r/s measurements, accuracy of values greater than 1600 r/s is not assured.

2.3 MAX Hold Measurement (3404 only)

Press the **MODE** switch to enter the MAX mode.



- In this mode, like the normal measurement, the speed of rotation is measured and the maximum detected value is displayed where there is variation in the speed of rotation.
- Measurement may be freely switched between r/min and r/s.
- Pressing the **RESET** switch in this mode will clear the displayed maximum value.

2.4 MIN Hold Measurement (3404 only)

Press the **MODE** switch to enter the MIN mode.



NOTE

- In MIN hold measurement, verify that the detection LED is lit, and then press **RESET** switch and begin measurement.
- In this mode, like the normal measurement, the speed of rotation is measured, and the minimum detected value is displayed where there is variation in the speed of rotation.
 - Pressing the **RESET** switch in this mode will clear the displayed minimum value.
 - Measurement may be freely switched between r/min and r/s.
 - The displayed maximum and minimum values will be cleared with the **RESET** switch only. The maximum and minimum values won't be cleared by changing the mode with the **MODE** switch.
 - The maximum and minimum values will continue to be updated even after moving to another mode.

Cautions in MAX and MIN hold measurement

- Do not switch between FAST and SLOW measurement modes during measurement of MAX or MIN hold. If the tachometer is switched between FAST and SLOW modes, press the **RESET** switch and begin measurement again.
- The analog output during MAX and MIN hold measurement is independent of the displayed values, and always represents the normal measurement value.

2.5 TOTAL Measurement (3404 only)

Measurement in this mode is different from normal mode measurement in that pulses are simply counted, and the total displayed.



1. Press the **MODE** switch to enter the TOTAL mode.
2. It will be 5 digit display. Displays of measurement values of 100,000 and higher use a decimal point code system, where the actual value = (number of decimal points) x 100,000 + displayed value.

<For example>

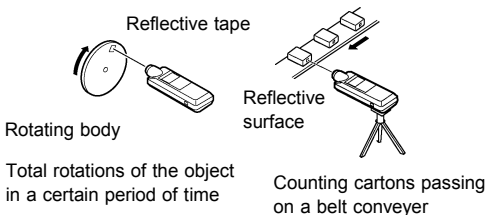
$$3 \times 100,000 + 83201 = 383201$$



NOTE

- When the count exceeds 600,000, the display shows "-----" and the tachometer stops counting.
- The counting will continue inside the tachometer, even after the **HOLD** switch is pressed.
- The measurement value is cleared by pressing the **RESET** switch.

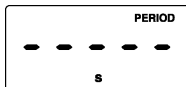
Application example



2.6 PERIOD Measurement (3404 only)

In this mode the time of the rotation pulse (period) is measured.

1. Press the **MODE** switch to start PERIOD measurement.
2. For measurement of 2 s and longer, the display will appear as shown below.



- NOTE**
- During PERIOD measurements, accuracy of values less than 600 μ s is not assured.
 - For the PERIOD measurement, two sampling modes; FAST and SLOW are available. In the FAST mode, the last digit of the display will be fixed to zero.

Cautions in TOTAL and PERIOD measurement

- In TOTAL and PERIOD measurement the measurement value is displayed regardless of changes to r/min/r/s.
- During the TOTAL and PERIOD measurement, the analog output will be based on results of the NORMAL measurement, regardless of the current display.
- The TOTAL measurement counting will continue even after moving to another mode.

2.7 FAST/SLOW Mode Measurement (3404 only)

The FAST/SLOW mode, switch selects different sampling periods for measurement and display. The sampling period of the analog output is also changed.

NOTE

- Do not switch between FAST and SLOW modes during measurement in the MAX and MIN measurement mode. If the mode is switched, press the **RESET** switch and restart measurement.
- The display for TOTAL is not affected by the FAST/SLOW mode switch operation.
- During the PERIOD measurement, the last digit of the display will be fixed to zero in the FAST mode.

FAST/SLOW mode display

Number of rotating (r/min)	SLOW display (r/min)	Accuracy (r/min)	FAST display (r/min)	Accuracy (r/min)
625.4	625.4	± 0.1	625.0	± 2
1234.5	1234.5	± 0.2	1234.0	± 4
5421	5421	± 1	5420	± 20
15432	15432	± 2	15430	± 40
65878	65870	± 10	65800	± 200

0: indicates digits fixed to 0.

2.8 Data Hold

This is used to freeze (hold) a displayed value when it is difficult to read the display.

When the **HOLD** switch is pressed, the display will be held, and also be suspended. Pressing it for a second time will release the hold.

NOTE

Data hold is valid in all measurement modes.

2.9 Buzzer Off Set

Turn on the power while holding the **HOLD** switch down.

NOTE

Keep the HOLD switch depressed until all the LCD indications light up and then go out (about one second).

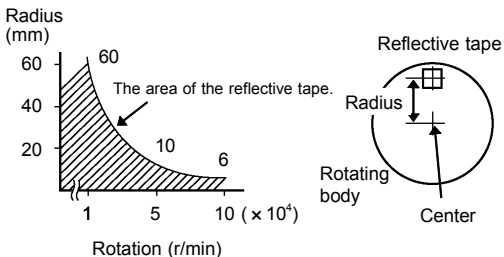
Chapter 3 Precautions

Precautions in Measurement of High-Rotation Objects

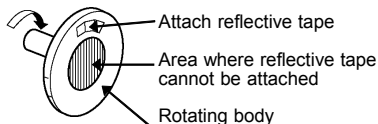
Detection of reflected light uses modulated light to minimize the effects of incident light. When this modulated light is input for a fixed period of time (about 0.2 ms) or longer, a single pulse is detected. For this reason, if the light pulse generated by the passing reflective tape is less than 0.2 ms detection is not possible.

The range that can be detected with a 12 mm square target of reflective tape is indicated below.

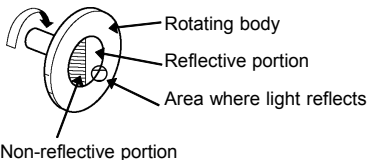
Radius is the distance between the center of the rotating object and the center of the tape.



If the reflective tape cannot be attached within this detection range, increase the area of the reflective tape so that the generated pulse is 0.2 ms or higher.



For measurement of 30,000 r/min or higher, use the following method:

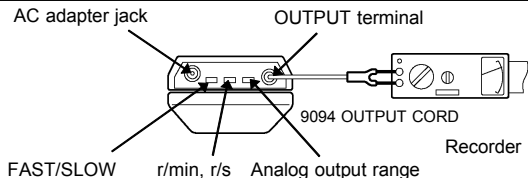
**NOTE**

The red light from the tachometer should be adjusted slightly off center as shown, not to the center of the rotating body.

Chapter 4 Analog Output (3404 only)

CAUTION

Do not input an external voltage to the analog output terminal.



1. Attach reflective tape to the rotating body.
2. Connect the recorder and OUTPUT terminal with the 9094 OUTPUT CORD (comes with tachometer).
3. Set sampling speed to FAST or SLOW, and range to r/min or r/s.
4. Select the analog output magnification to suit maximum r/min and recorder range conditions.
5. Turn on power switch.
6. Check that the output is 0 where there is no rotation being detected.
7. Output the red light from the tachometer detector window toward the reflective tape on the rotating object.

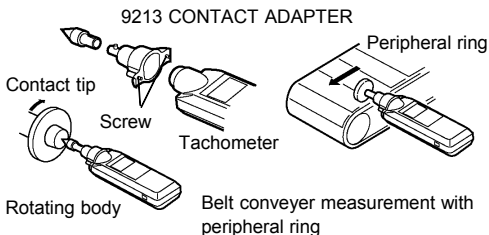
	Analog output magnification	Measurement range → output range
r/min	X 0.1 (mV) X 0.01 (mV)	30 to 10000 r/min → 3 to 1000 mV 100 to 100000 r/min → 1 to 1000 mV
r/s	X 10 (mV) X 1 (mV)	0.5 to 100 r/s → 5 to 1000 (mV) 1 to 1000 r/s → 1 to 1000 (mV)

- Analog output is the conversion of the displayed rotation speed to mV, multiplied by the selected magnification.
Minimum resolution for analog output is 1 mV, regardless of range. In other words, in the x 0.1 mV magnification analog output is in 10 r/min steps; and in the x 0.01 mV magnification, it is in 100 r/min steps. in the x 10 mV magnification, analog output is in 0.1 r/s; and in the x 1 mV magnification, it is in 1 r/s steps.
- Analog output will convert measured results for each sample (D/A) for stable output even at low rotation speeds. The sampling rate will be changed when the measurement is switched between FAST and SLOW modes, allowing the optimum mode for specific applications to be selected.
- Sampling is 0.7 to 2.0 s in the SLOW mode, and 0.12 to 0.5 s in the FAST mode.
- In r/s measurement, maximum output is 1000 r/s, as even in the x 1 mV range full scale output is 1 V.

- The analog output is sent out during the NORMAL, MAX HOLD and MIN HOLD measurement. During the TOTAL and PERIOD measurement, the analog output will be based on results of the NORMAL measurement. When using the MAX, MIN and **HOLD** measuring features, the output level is not held constant, but remains the same as during normal measuring.
- The analog output uses the current measurement, not the held data, during the DATA HOLD.

Chapter 5

Measurement with 9213 CONTACT ADAPTER



1. Attach the contact adapter over the detector window with the "up" mark facing up. Tighten it with a screwdriver on both sides.
2. Turn on the power, and rotate the contact tip manually. Check that the buzzer sounds and the LED lights.
3. For rotation speed measurement, insert the shaft of the 9033 RUBBER CONTACT TIP or 9032 METAL CONTACT TIP (used with soft rotating objects).
4. Lightly press the contact tip against the center of the rotating body.


5. Insert the 9212 PERIPHERAL RING onto the adapter for measurement of period, such as for a belt conveyer.
 - For r/min mode measurement, the display reading is multiplied by 0.1, read in m/min.
 - For r/s mode measurement, the display reading is multiplied by 0.1, read in m/s.







Do not use with rotating bodies that do not have dent in the center.

Chapter 6 Specifications

Measurement method	Visible light reflection
Display	LCD 4 1/2 digits (5 digits with the last digit fixed at 0 for 20, 000 r/min and higher) TOTAL measurement: 5 digits (3404 only)
Display marks	HOLD , r/min, r/s, and B marks (MAX, MIN, TOTAL, PERIOD, μ s, ms, s (3404 only))
Range select	Automatic
Sampling period	0.5 to 2.0 s (SLOW mode and on the 3403) 0.1 to 0.5 s (on the 3404 FAST mode)
Data hold	Fixes the display when the hold switch is used.
Over range display	Displays "-----"
MAX, MIN hold	Holds maximum or minimum value display (3404 only)
Detection distance	50 to 200 mm (1.97" to 7.87")
Reflected light detection confirmation	Buzzer and LED

Accuracy	<p>NORMAL, MAX, MIN (SLOW mode and 3403)</p> <p>4 digits ± 1 dgt. (± 10 dgt. for 20,000 and over. See note *¹.)</p> <p>4 1/2 digits ± 2 dgt.</p> <p>(FAST mode) (3404 only)</p> <p>4 digits ± 20 dgt. (see *¹)</p> <p>(± 200 dgt. for 20,000 and over. See note *².)</p> <p>4 1/2 digits ± 40 dgt. (see *¹)</p> <p>PERIOD (3404 only)</p> <p>(SLOW mode)</p> <p>4 digits ± 1 dgt.</p> <p>4 1/2 digits ± 2 dgt.</p> <p>(FAST mode)</p> <p>4 digits ± 20 dgt.*¹</p> <p>4 1/2 digits ± 40 dgt.*¹</p> <p>*¹: Last one digit fixed to 0</p> <p>*²: Last two digits fixed to 0</p>
Tripod mounting	Tripod mounting bolt provided on body
Operating temperature/humidity	0 to 40°C (32 to 104°F), 80% RH or less (no condensation)
Storage temperature/humidity	-10 to 50°C (14 to 122°F), 80% RH or less (no condensation)
Power supply	Rated supply voltage: 6.0 VDC Regulated power supply range: 6.0 V or later (until the  mark lights up) Four R6P manganese batteries
Continuous measurement time	3403: approx. 17 h 3404: approx. 16 h
AC adapter	6 V / 300 mA : 5 mm dia

Maximum rated power	0.4 VA
Dimensions and mass	Approx. 62W x 182H x 38D mm (2.44"W x 7.17"H x 1.50"D) Approx. 260 g (9.2 oz.)
Standards Safety EMC	EN61010-1:1993+A2:1995 Pollution Degree 2, Overvoltage Category I (anticipated transient overvoltage 330 V) EN61326:1997+A1:1998+A2:2001 +A3:2003
Accessories	9211 REFLECTIVE TAPE (1 sheet) 9094 OUTPUT CORD (3404 only) Carrying case Four R6P manganese batteries Instruction manual
Option	9211 REFLECTIVE TAPE (10 sheets) 9035 AC ADAPTER (no CE marking) 9094 OUTPUT CORD 9213 CONTACT ADAPTER (includes the 9032, the 9033 (two), the 9212, screwdriver)     9213 9032 9033 9212

Analog output (3404 only):
DC, Max. 1 V, Min. resolution 1 mV

	Analog output magnification	Measurement range → output range
r/min	X 0.1 (mV) X 0.01 (mV)	30 to 10000 r/min → 3 to 1000 mV 100 to 100000 r/min → 1 to 1000 mV
r/s	X 10 (mV) X 1 (mV)	0.5 to 100 r/s → 5 to 1000 mV 1 to 1000 r/s → 1 to 1000 mV

(Accuracy $\pm 1\%$ rdg. ± 1 mV,
Output resistance: 1 k Ω)

Measurement range:

<Non-contact type>

NORMAL, MAX, MIN

(In SLOW mode and on the 3403)

30 to 99990 r/min, 0.5 to 1600 r/s

	r/min	r/s
Range	30.00 to 199.99	0.5000 to 1.9999
	200.0 to 1999.9	2.000 to 19.999
	2000 to 19999	20.00 to 199.99
	2000 \square to 9999 \square	200.0 to 1600.0

\square : indicates digits fixed to 0.

(In FAST mode on the 3404 only)

120 to 99900 r/min, 2 to 1600 r/s

	r/min	r/s
Range	120.0 \square to 1999.9 \square	
	200. \square to 1999. \square	2.00 \square to 19.99 \square
	200 \square to 1999 \square	20.0 \square to 199.9 \square
	200 \square \square to 999 \square \square	200.0 \square to 160.0 \square

\square : indicates digits fixed to 0.

TOTAL (3404 only): 0 to 599999, 5 digit display (decimal point used for 100,000 counts and higher)

	Display	Measurement range
Range	00000 to 99999	(0 to 99999)
	00000. to 99999.	(100000 to 199999)
	0000.0 to 9999.9.	(200000 to 299999)
	000.0.0 to 999.9.9.	(300000 to 399999)
	00.0.0.0 to 99.9.9.9.	(400000 to 499999)
	0.0.0.0.0 to 9.9.9.9.9.	(500000 to 599999)

PERIOD (3404 only): 600 μ s to 1.9999 s (SLOW), 600 μ s to 500 ms (FAST)

	SLOW	FAST
Range	600.0 to 999.9 μ s	600. <u>0</u> to 999. <u>0</u> μ s
	1.0000 to 1.9999 ms	1.000 <u>0</u> to 1.999 <u>0</u> ms
	2.000 to 19.999 ms	2.00 <u>0</u> to 19.99 <u>0</u> ms
	20.00 to 199.99 ms	20.0 <u>0</u> to 199.9 <u>0</u> ms
	200.0 to 999.9 ms	200. <u>0</u> to 500. <u>0</u> ms
	1.0000 to 1.9999 s	

0: indicates digits fixed to 0.

<Contact type>

NORMAL, MAX, MIN

(in SLOW mode and on the 3403): 30 to 20000 r/min, 0.5 to 333 r/s

(in FAST mode on the 3404 only): 120 to 20000 r/min, 2 to 333 r/s

Chapter 7

Maintenance and Service

7.1 Battery Replacement




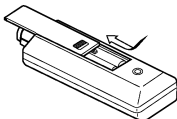
WARNING

- To avoid electric shock when replacing the batteries, first disconnect the output cord and AC adapter.
 - Do not mix old and new batteries, or different types of batteries. Also, be careful to observe battery polarity during installation. Otherwise, poor performance or damage from battery leakage could result.
 - To avoid the possibility of explosion, do not short circuit, disassemble or incinerate batteries.
 - Handle and dispose of batteries in accordance with local regulations.
-

NOTE

Pack the product carefully so that it will not be damaged during shipment, and include a detailed written description of the problem. Hioki cannot be responsible for damage that occurs during shipment.

When the  lights on the display, slide open the cover and replace the batteries.



7.2 Maintenance

To clean the instrument, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.

7.3 Service

If the instrument seems to be malfunctioning, confirm that the cables are not open circuited before contacting your dealer or Hioki representative. Pack the instrument carefully so that it will not be damaged during shipment, and include a detailed written description of the problem. Hioki cannot be responsible for damage that occurs during shipment.

HIOKI

DECLARATION OF CONFORMITY

Manufacturer's Name: HIOKI E.E. CORPORATION

Manufacturer's Address: 81 Koizumi, Ueda, Nagano
386-1192, Japan

Product Name: TACHO HiTESTER

Model Number: 3403, 3404

Accessory: 9094 CONNECTION CORD
9213 CONTACT ADAPTER SET

The above mentioned products conform to the following
product specifications:

Safety: EN61010-1:2001

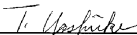
EMC: EN61326:1997+A1:1998+A2:2001+A3:2003
ClassB equipment
Portable test and measurement equipment.

Supplementary Information:

The product herewith complies with the requirements of
the EMC Directive 89/336/EEC, but is not applicable to the
Low Voltage Directive 73/23/EEC.

HIOKI E.E. CORPORATION

15 September 2006



Tatsuyoshi Yoshiike
President

3403B999-04

HIOKI 3403,3404 TACHO HiTESTER
Instruction Manual

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- All reasonable care has been taken in the production of this manual, but if you find any points which are unclear or in error, please contact your supplier or the International Sales and Marketing Department at HIOKI headquarters.
 - In the interests of product development, the contents of this manual are subject to revision without prior notice.
 - Unauthorized reproduction or copying of this manual is prohibited.
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HIOKI

HIOKI E. E. CORPORATION

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