

Specifications

|                                   |  |  |
|-----------------------------------|--|--|
| Name                              | HAKKO 441B Footwear Tester   |  |
| Power Consumption                 | 100V AC $\pm$ 10% 2.5W   |  |
| Measurement Voltage               | 25V DC   |  |
| Measurement Range<br>( $\Omega$ ) | 10 <sup>3</sup> $\Omega$ mode                                      | 10 <sup>8</sup> $\Omega$ mode            |
|                                   | LOW $R < 1 \times 10^5 \pm 5\%$                                    | LOW $R < 1 \times 10^5 \pm 5\%$          |
|                                   | GOOD $1 \times 10^5 < R < 1 \times 10^8$                           | GOOD $1 \times 10^5 < R < 1 \times 10^8$ |
|                                   | HIGH $1 \times 10^8 < R \pm 8\%$                                   | HIGH $1 \times 10^8 < R \pm 8\%$         |
| Working Environment               | 0 to 40°C, RH20 to 90% no condensation                             |  |
| Dimensions (main unit)            | 120 (W) $\times$ 170 (D) $\times$ 45 (H) mm                        |  |
| Weight                            | Tester main unit 750 g (Including mounting base)/Test plate 1.8 kg |  |

\* HAKKO offers calibration service for the 441B. Contact Hakko for details.

\* This product meets China RoHS requirements.

\* Specifications and appearance are subject to change without notice.

中國RoHS: 產品中有毒有害物質或元素的名稱及含量

| 部件名稱   | 有毒有害物質或元素 |       |       |                 |               |                 |
|--|-----------|-------|-------|-----------------|---------------|-----------------|
|  | 鉛(Pb)     | 汞(Hg) | 鎘(Cd) | 六價鉻<br>(Cr(VI)) | 多溴聯苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 螺釘   | ×         | ○     | ○     | ○               | ○             | ○               |
| 凸緣   | ×         | ○     | ○     | ○               | ○             | ○               |
| ○: 表示該有毒有害物質在該部件所有均質材料中的含量均在SJ/T 11363-2006 標準規定的限量要求以下。<br>×: 表示該有毒有害物質至少在該部件的某一均質材料中的含量超出 SJ/T 11363-2006 標準規定的限量要求。 |           |       |       |                 |               |                 |



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HAKKO 441B  
FOOTWEAR TESTER  
Instruction Manual

Thank you for purchasing the Hakko 441B Footwear Tester.

The Hakko 441B is a tester for determining the anti-static performance of safety shoes while worn by the operator. The operator needs only to step onto the tester plate with one's shoes on and gently press the pad on the tester by hand. The tester determines whether resistance is within the range specified in JIS T8103 and, if the pair of shoes is good, displays the range that that resistance falls in. Moreover, with the 441B, the measurement mode can be changed in order measure in the  $1.0 \times 10^5 \leq R \leq 1.0 \times 10^8 \Omega$  ( $10^8 \Omega$  mode) resistance range of JIS T8103 revised in April 2001 or the  $1.0 \times 10^5 \leq R \leq 1.0 \times 10^8 \Omega$  ( $10^8 \Omega$  mode) Class 1 resistance range of JIS T8103 used prior thereto.

Read these instructions before use. Also, keep these instructions in a safe handy place for future reference.

PACING LIST

Check all of the following were included in the product package.

Tester (x 1) (main unit)

Test plate (x 1)

Mounting base (x 1)

Mounting screw (x 2)  
\* Delivered as they are screwed onto the tester main unit.

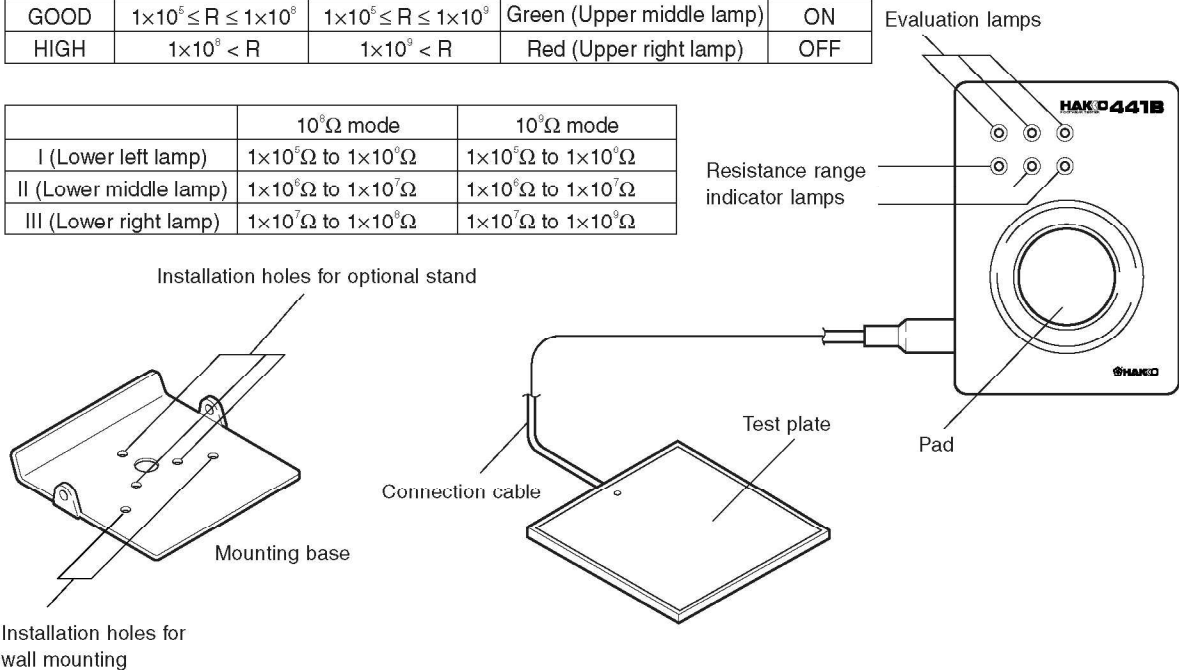
Pan head screws      Wood screws  
Wood screw (x 2), Pan head screw (x 2)

Instruction Manual (This publication)

PART NAMES

| Evaluation | Resistance Range (Ω)                      |   | LED Indication            | Buzzer |
|------------|---|---|---------------------------|--------|
|            | 10 <sup>8</sup> Ω mode                    | 10 <sup>9</sup> Ω mode                    |                           |        |
| LOW        | $R < 1 \times 10^5$                       | $R < 1 \times 10^5$                       | Red (Upper left lamp)     | OFF    |
| GOOD       | $1 \times 10^5 \leq R \leq 1 \times 10^8$ | $1 \times 10^5 \leq R \leq 1 \times 10^9$ | Green (Upper middle lamp) | ON     |
| HIGH       | $1 \times 10^8 < R$                       | $1 \times 10^9 < R$                       | Red (Upper right lamp)    | OFF    |

|                        | 10 <sup>8</sup> Ω mode                           | 10 <sup>9</sup> Ω mode                           |
|------------------------|--|--|
| I (Lower left lamp)    | $1 \times 10^5 \Omega$ to $1 \times 10^6 \Omega$ | $1 \times 10^5 \Omega$ to $1 \times 10^6 \Omega$ |
| II (Lower middle lamp) | $1 \times 10^6 \Omega$ to $1 \times 10^7 \Omega$ | $1 \times 10^6 \Omega$ to $1 \times 10^7 \Omega$ |
| III (Lower right lamp) | $1 \times 10^7 \Omega$ to $1 \times 10^8 \Omega$ | $1 \times 10^7 \Omega$ to $1 \times 10^9 \Omega$ |



SAFETY PRECAUTIONS

**CAUTION**

To prevent electrical shock and damage, observe the following precautions.

- Do not wet the product. And, do not perform measurements with wet hands.
- Do not subject the product to strong impacts. Do not hit or forcefully press the pad.
- Unplug the power cable from its outlet before long periods of disuse.

- Do not remodel or disassemble the product.
- Thick socks can effect anti-static evaluation. Properly wear anti-static shoes as explained in the instructions provided with the shoes.
- The mounting base is used when using the optional stand, therefore take good care of it.

HOW TO USE

● **Setting the Mode Selector Switch**

This product can be set to a maximum acceptable resistance of  $1.0 \times 10^8 \Omega$  (10<sup>8</sup>Ω mode) or  $1.0 \times 10^9 \Omega$  (10<sup>9</sup>Ω mode). The factory setting is the 10<sup>8</sup>Ω mode. Set the mode as desired. The measurement mode is set from the mode selector switch on the backside of the tester.

**Note**

This product measures resistance using a very weak electric current. During measurement, remain still on the test plate and press the pad firmly with 3 fingers. Moving your feet while on the test plate or not making full contact with your fingers on the pad can result in an incorrect evaluation.

**Mode selector switch**

**Setup**

- The tester main unit can be installed on a desk, wall or the optional stand.  
\* To use the tester main unit on a wall, first install the mounting base on the wall as shown in the figure using the included wood screws and pan head screws. Then, securely install the tester main unit on the mounting base using the two mounting screws.
- Insert the pin jacks of the connection cable from the test plate into the input on the lower left of the tester.
- Plug the power cable into a 100V AC outlet. (Unplug the power cable from its outlet before long periods of disuse.)

a. The green lamp (GOOD) lights and a buzzer sounds to indicate that the anti-static shoes are working properly. When the green lamp lights and shoes result good, the resistance range of the shoes at that time is indicated by the 3 LED lamps below the green lamp, therefore the characteristics of the anti-static shoes can be checked.

|     | 10 <sup>8</sup> Ω mode                           | 10 <sup>9</sup> Ω mode                           |
|-----|--|--|
| I   | $1 \times 10^5 \Omega \sim 1 \times 10^6 \Omega$ | $1 \times 10^5 \Omega \sim 1 \times 10^6 \Omega$ |
| II  | $1 \times 10^6 \Omega \sim 1 \times 10^7 \Omega$ | $1 \times 10^6 \Omega \sim 1 \times 10^7 \Omega$ |
| III | $1 \times 10^7 \Omega \sim 1 \times 10^8 \Omega$ | $1 \times 10^7 \Omega \sim 1 \times 10^9 \Omega$ |

Resistance ranges are set as I ~ III, but these are not exact values, therefore think of them as references.

b. If the LOW and lower left lamps (red) light  
The resistance of the anti-static shoes and the person is less than  $1 \times 10^5 \Omega$ , therefore check for the cause and take whatever action is necessary including changing to another pair of anti-static shoes.  
Examples: Soles are worn down.  
A piece of metal is stuck in the sole.

c. If the HIGH and lower right lamps (red) light  
The resistance of the anti-static shoes and the person is more than  $1 \times 10^8 \Omega$  or  $1 \times 10^9 \Omega$ , therefore check for the cause and take whatever action is necessary including changing to another pair of anti-static shoes.  
Examples: Thick socks are worn.  
Defective shoes, dirty soles, etc.

Measurement

4. Step onto the test plate with anti-static shoes on and gently press the pad on the tester main unit with 3 fingers. The resistance of the anti-static shoes (and person) is measured with shoes on. Evaluation is rated as follows.

| Evaluation | Resistance Range (Ω)                      |   | LED Indication | Buzzer |
|------------|---|---|----------------|--------|
|            | 10 <sup>8</sup> Ω mode                    | 10 <sup>9</sup> Ω mode                    |                |        |
| LOW        | $R < 1 \times 10^5$                       | $R < 1 \times 10^5$                       | Red            | OFF    |
| GOOD       | $1 \times 10^5 \leq R \leq 1 \times 10^8$ | $1 \times 10^5 \leq R \leq 1 \times 10^9$ | Green          | ON     |
| HIGH       | $1 \times 10^8 < R$                       | $1 \times 10^9 < R$                       | Red            | OFF    |